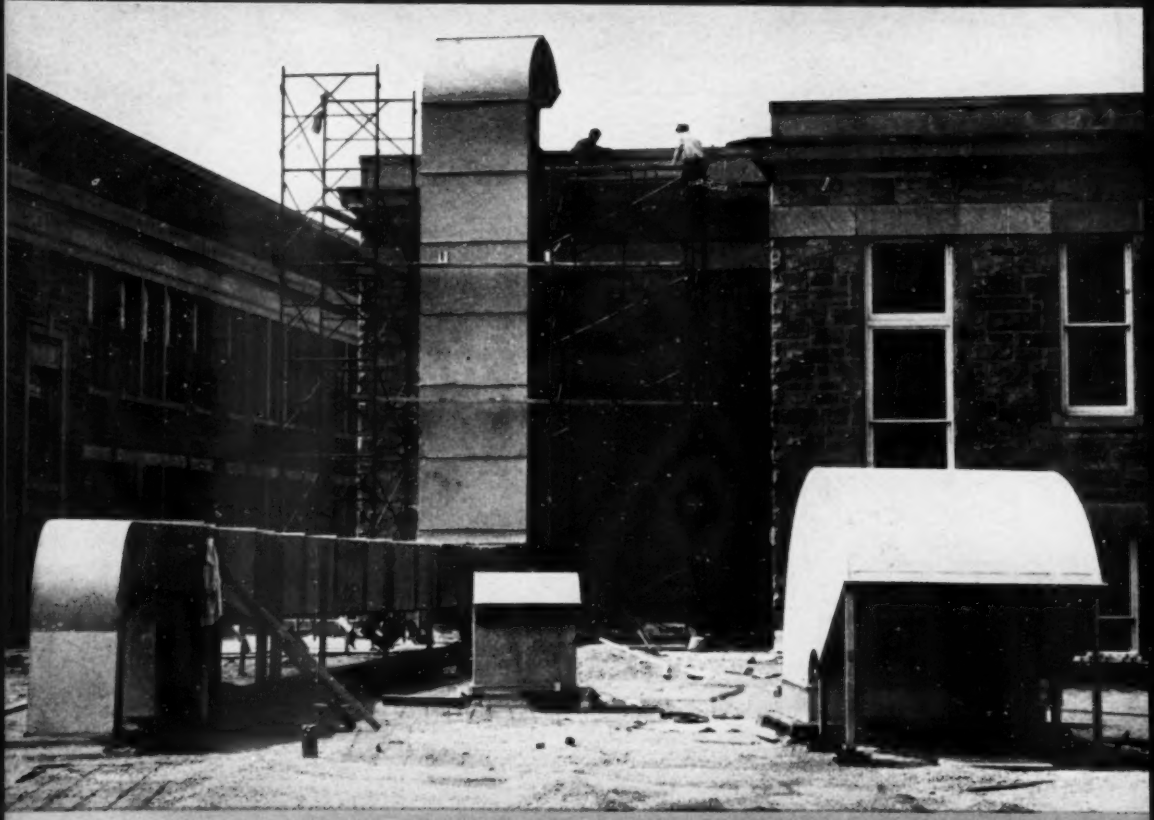
ARTISAN



• Patented scaffolding can be of practical value to sheet metal contractors in speeding erection of ventilating and exhaust systems. Safety and increased mobility are major features. Page 110.

• Heating and sheet metal sales can be boosted by applying time-tested merchandising techniques and advertising. Page 68.

• The Schmidlin plan for compensating salesmen has gained a reputation for eliminating sales problems. Page 74.

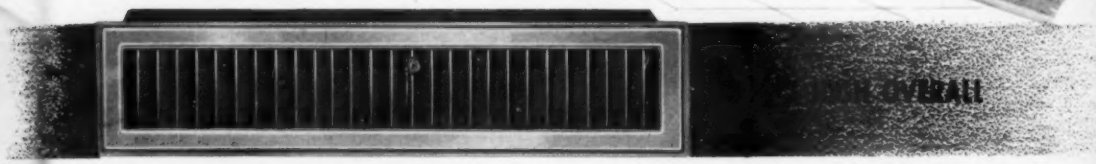
• Direct mail offers an opportunity to put new customers on the books with relatively low expense. Page 72.

• Proper slab construction is essential to heating basementless houses. Three important steps are on Page 86.

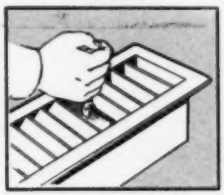
Air Control PERIMETER DIFFUSERS

are ideal for those narrow, hard to fit outlets.

You will find hundreds of uses for these new heavy duty registers with their adjustable vanes. Ideal for Perimeter heating systems and other installations where the over-all width of the register must be kept to a minimum. An adjustable valve does the work of a quadrant damper, one man can balance a system. Narrow ¾" margin adds to the trim appearance of these units.

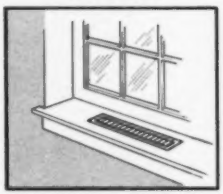


ADJUSTABLE VANES



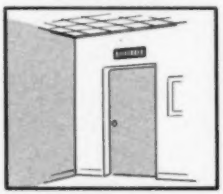
Heavy 16 gauge vanes may be adjusted to change the air pattern as desired. Factory setting gives a fan shaped air pattern. Special embossing prevents vanes from shearing off when they are adjusted.

PICTURE WINDOWS



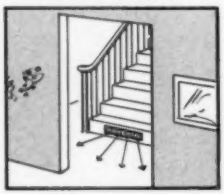
Where Perimeter heating is not used the unit may be installed in the window sill or under the window where it will throw a blanket of warm air across the window, thus preventing cold down drafts from the large glass area.

SIDE WALL INSTALLATIONS



Ideal for side wall installation where high velocity air speeds are used. Heavy welded construction prevents whistles and rattles. Adjustable valve makes it easy to balance the systems.

OTHER INSTALLATIONS

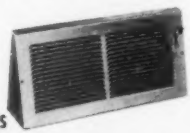


The low 2¼" size is just right for stair risers, under kitchen cabinets, etc.

A narrow ¾" margin gives this unit a smart, trim appearance that blends with any interior.

Made in 4 Sizes

Opening Size	Overall Dimension	Free Area
10 x 4	11¼ x 5¼	27.187
12 x 4	13¼ x 5¼	35.475
14 x 4	15¼ x 5¼	41.687
14 x 2¼	15¼ x 3½	21.562



PERIMETER BASE BOARD REGISTERS & GRILLES

3¼" Projection Adjustable dampers and horizontal adjustable fins.

See your Air Control Jobber or write for **PERIMETER DIFFUSER BULLETIN NO. 68-PD**

AIR CONTROL PRODUCTS, INC.

COOPERSVILLE MICHIGAN

"400 SERIES"

CHECK THESE WANTED FEATURES:

- 20-gauge Steel
- Brass Bushings
- Sponge Rubber Gaskets
- Precision-made Parts
- Sturdy Construction
- Unmatched Beauty
- Lacquered Finish

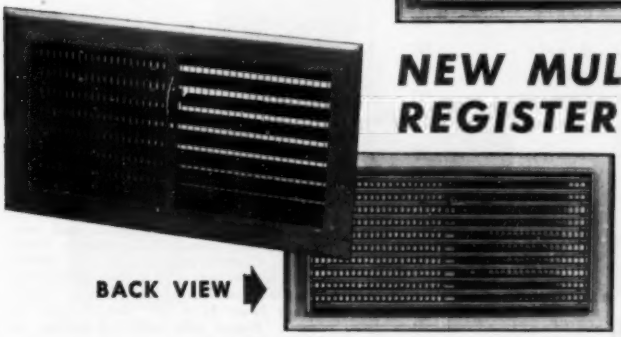
Char-Gale Forced Air Registers . . . the "400 Series", are furnished in standard sizes in both sidewall and baseboard types. The brown lacquered finish can be used "as is", or refinished to match the color of the room.

IMPROVED SINGLE VALVE REGISTER

This register features the new Char-Gale hinge arrangement. It permits simple adjustment and provides a free working damper. Will not bind. To prevent noise within the damper unit, a spring steel tab applies tension at all times.

BACK VIEW

NEW MULTIPLE VANE REGISTER



BACK VIEW

Designed with narrow vanes, Char-Gale multiple vane registers will fit in narrow walls which would not have space enough for standard single damper registers. Constructed to diffuse the air both horizontally and vertically.

Char-Gale manufactures a complete line of gravity registers, steel face registers, sidewall and baseboard vents in standard sizes.

SEND FOR OUR NEW REGISTER FOLDER

AMERICAN ARTISAN

RESIDENTIAL
AIR CONDITIONING
WARM AIR HEATING
SHEET METAL CONTRACTING

Member—Audit Bureau of Circulations
Member—Associated Business Publications

Merged with American Artisan are "Warm Air Heating" and "Furnaces and Sheet Metals"

MANAGEMENT SECTION

News Round-Up 63
Steel For Scrap For Defense 67
Merchandising and Promotion Boom Heating and Sheet Metal Business 68
Well Trained Salesmen Are Assets 71
Letters That Land New Accounts 72
Schmidlin Plan Ends Sales Problems 74
Current Control Picture 75
New Construction Regulation 77

RESIDENTIAL AIR CONDITIONING SECTION

Eastern Heating Market Demands Quality . . . 81
Non-Metallic Ductwork Applied To Concrete Slabs 83
These Three Steps in Slab Construction Prevent Heat Waste 86
Open For Discussion 88
Draft Control Installation Made Easy 90
Resistance Concept of Heat Transmission (III) . . 91
Standards For Installation Of Gas Piping And Gas Appliances In Building (IV) 96

SHEET METAL SECTION

Tooling For Sheet Metal Defense Production . 101
How To Avoid Heat Fatigue 103
Reid—Round Pipe Intersecting Taper at Angle . 104
Fundamentals of Sheet Metal Practice (V) . . 106
Efficient Planning Makes Sheet Metal Shop Profitable 110

DEPARTMENTS

The Editor's Notebook 6
Association Activities 115
Equipment Developments 117
New Literature 121
Sales Sense by Jack Bedford 128
Industry Items 130

EDITOR
JOHN E. PETERSON

ASSOCIATE EDITOR
JOHN McCULLOUGH

ADVERTISING STAFF
WALLACE J. OSBORN
New York City
MUrray Hill 9-8293

ROBERT A. JACK
Cleveland
YEllowstone 2-1540

JAMES D. THOMAS
GEORGE C. CUTLER
Chicago
STate 2-6916

R. PAYNE WETTSTEIN
Los Angeles—DUnkirk 8-2286
San Francisco—YUkon 6-2522
Portland—ATwater 4107

Published monthly by Keeney Publishing Company, 6 N. Michigan Ave., Chicago 2, Ill., U.S.A.

Copyright 1951 by Keeney Publishing Company.

Publisher—FRANK P. KEENEY
Manager—CHARLES E. PRICE
Production Manager—L. A. DOYLE
Circulation Director—FRANK S. EASTER

Yearly Subscription Price—U.S. and possessions, $3.00; Canada, Cuba, Mexico, South America, Central America, $4.00; Others $6.00. Single copies, U.S. and possessions, $.35. Back numbers, $.60. January, 1951, Directory Issue, $1.50 per copy. *Change in Address:* Report new and old address to publisher and local post office; deadline, 23rd-25th of preceding month. Entered as second-class matter, July 29, 1932, at the post office at Chicago, Illinois, under the Act of March 3, 1879. Additional entry at Mendota, Illinois.

Founded 1864

JULY, 1951

Volume 88, No. 7

Syncromatic

LEADER... IN ENGINEERED WARM AIR HEATING EQUIPMENT

GIVES YOU

OIL HIGHBOY
85,000 B.T.U.

GAS HIGHBOY
75-100,000 B.T.U.

Syncromatic COUNTER FLOW

EFFICIENCY

It costs *a lot less* to heat with a syncromatic.

Syncromatic employs its patented Counter-Flow design which literally "scrubs" the heat units out of combustion gases.

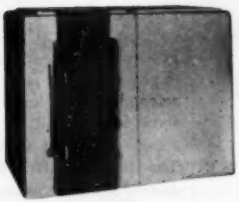
STABILITY

All Syncromatic heat exchangers, whether coal, gas or oil, are made from heavy gauge steel to give your furnace added insurance for safety and long life.

A COMPLETE

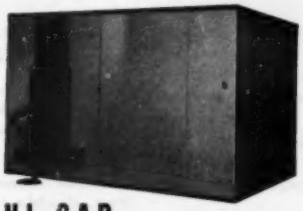
Line for all fuels and in ratings from 60,000 B.T.U. to 1,000,000 B.T.U.

G.F.B. 410-11



C.F.B. HAND FIRED
Coal Gravity or Forced Air
90,000 to 250,000 B.T.U.

700 DE LUXE SERIES
110,000 and 146,000 B.T.U.



HI-CAP
OIL—GAS—COAL • 10 SIZES
330,000 to 1,000,000 B.T.U.

MANUFACTURED BY

Syncromatic Corporation
WATERTOWN, WISCONSIN

1931 20th YEAR 1951

the editor's notebook

Warehouse Steel Rises

Railroads and warehouses received the greatest tonnage increases in shipments of steel in the first four months of this year, according to a report by the American Iron and Steel Institute.

In this period, warehouses received 4,688,000 tons, an increase of 590,000 tons over the first four months of 1950. In April, shipments of 1,200,000 tons to warehouses surpassed the total shipped to the automotive industry, putting warehouses in first place for the first time in about four years. Steel shipped to warehouses in April represented 18.4 per cent of the industry's production while the tonnage shipped to the automotive industry amounted to 17.4 per cent.

Total shipments of steel in four months were 26,371,000 tons, an increase of more than 19 per cent over the corresponding months of 1950.

Illegal Secondary Boycott

The Supreme Court, in a far reaching decision, has ruled that it is illegal for a union to strike against one employer in order to force him to sever business relations with another employer.

Previous National Labor Relations Board action on illegal secondary boycotts thus was upheld.

In the case of *NLRB vs. Denver Building Trades Council*, a general contractor made a construction agreement with a subcontractor who employed non-union men.

The general contractor and all other subcontractors on the same project employed only members of unions affiliated with the local building trades council which called a strike when the general contractor refused to terminate his agreement with the non-union subcontractor.

It was immaterial, said the court, that the union may have had other objectives in addition to forcing the general contractor to terminate his agreement with the non-union employer.

Also, added the court, it made no difference that the contractor and subcontractor were engaged on the same project and that the former had some supervision over the latter's work. The court ruled that they were independent contractors.

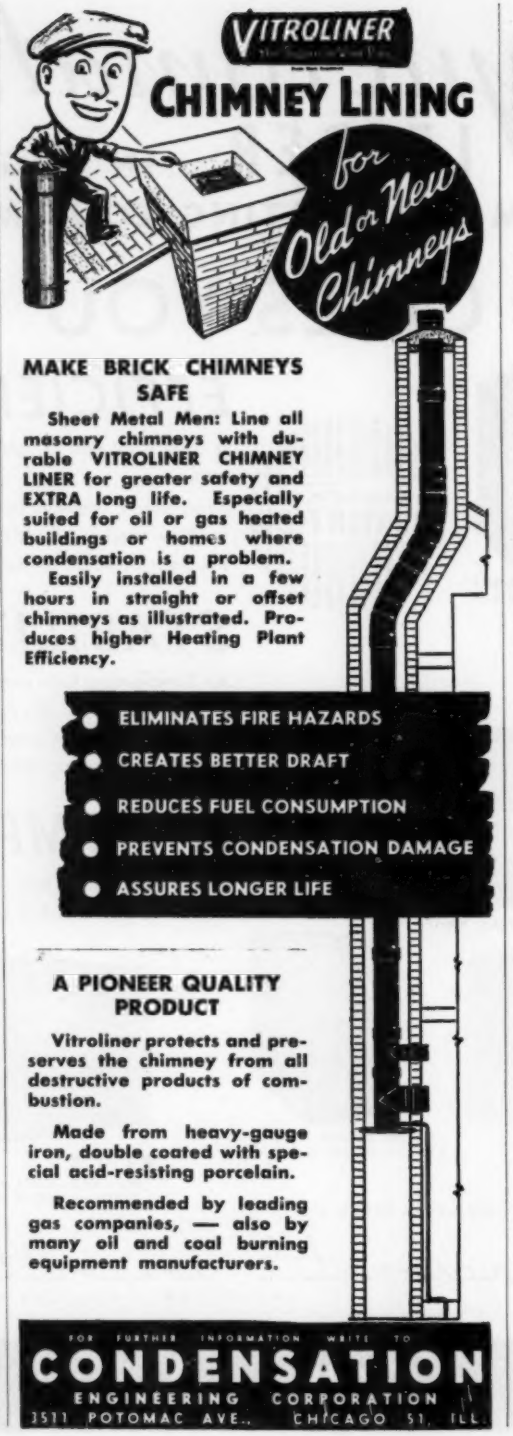
In a case where a union picketed a mill to obtain union recognition, the court said the situation was different. Here the strike was against the mill operator and not against the customers and therefore was permissible as a primary strike.

Screws and Screwdrivers

Now take a screwdriver.

You would never consider a screwdriver as an extraordinary tool, but the Vaco Products Co. does. This company has prepared a catalog that might be called a handbook, reference encyclopedia, and show window all in one, all about screws and screwdrivers. The list of different screwdrivers is almost unimaginable. It sounds like an inventory of a fishing tackle box, one of those lists that can go on and on, ad infinitum.

Never before — so they say — have so many illustrations, vital information, engineering data, and handy reference material on both screws and screwdrivers been assembled and organized. We can't list all the types, but it seems there is a screwdriver for every purse and


VITROLINER
CHIMNEY LINING
for Old or New Chimneys
MAKE BRICK CHIMNEYS SAFE
Sheet Metal Men: Line all masonry chimneys with durable VITROLINER CHIMNEY LINER for greater safety and EXTRA long life. Especially suited for oil or gas heated buildings or homes where condensation is a problem.
Easily installed in a few hours in straight or offset chimneys as illustrated. Produces higher Heating Plant Efficiency.
ELIMINATES FIRE HAZARDS
CREATES BETTER DRAFT
REDUCES FUEL CONSUMPTION
PREVENTS CONDENSATION DAMAGE
ASSURES LONGER LIFE
A PIONEER QUALITY PRODUCT
Vitroliner protects and preserves the chimney from all destructive products of combustion.
Made from heavy-gauge iron, double coated with special acid-resisting porcelain.
Recommended by leading gas companies, — also by many oil and coal burning equipment manufacturers.
FOR FURTHER INFORMATION WRITE TO
CONDENSATION
ENGINEERING CORPORATION
3511 POTOMAC AVE., CHICAGO 51, ILL.

the editor's notebook

There's a lot to be said for Wolff Red Seal Expanded Metal

BENJAMIN WOLFF & COMPANY
PRIME METAL SERVICE
CHICAGO

It's strong, lightweight, economical— and available now

THINK what you can do with Wolff Red Seal Expanded Metal — a versatile, easily fabricated structural material that packs great strength into lightness in weight. You can apply it indoors or outdoors; use it functionally to increase light, provide better drainage, improve ventilation, safeguard danger spots.

For these purposes and many others, there's nothing like Expanded Metal . . . and there's no expanded metal like Wolff Red Seal — clean-cut, flat-lying and free from burrs and protrusions. Call or write for full information and a bulletin of ideas on where you can put expanded metal to work for you.

Carbon Steels, Stainless Steels, Aluminum, Copper, Tinplate, Metal Decorating

the editor's notebook

purpose. So next time that screwdriver slips off a metal screw don't blame us. This treatise will tell you why and everything else that you need to know about screwdrivers.

If you want a copy, address the editors.

Gas Venting

Venting of gas appliances today has become of the utmost importance to the gas industry, and it was one of the chief subjects discussed at the Research and Utilization Conference recently held under the auspices of the Committee on Domestic Gas Research and the Utilization Bureau of the American Gas Association at Cleveland.

The tight construction of modern homes, as well as the use of insulation, weather stripping, vapor barriers, and other sealing methods in an effort to conserve heat has so tightened houses that sufficient air changes cannot be obtained. This has brought problems of humidity control and venting that never existed before.

Venting was defined by Dr. C. Hite, Purdue University, as the proper removal of the products of combustion from the inside of a dwelling to the outside atmosphere.

Finger on the Pulse

Cold corners, drafty floors, and over-heating are still tolerated in a surprising number of American homes today because the families are unaware of the new comforts and economies possible through the heating industry's latest developments. This conclusion was reached from analysis of a national survey.

More than 3,300 people in 105 cities, towns, and villages were interviewed as part of an extensive survey undertaken by two independent research organizations on behalf of Minneapolis-Honeywell Regulator Company.

The study also probed into the practices and attitudes of heating dealers and wholesalers as related to heating controls and reported on the extent of architects' specifications for residential heating systems and controls and the opinion of speculative home builders.

Today there are about 45 million homes in the nation and roughly half of these (23,600,000) are more than thirty years old. The survey revealed that many of these older homes now are beginning to lag far behind in modern standards of living and comfort.

In states where central heating is desirable, two out of every three homes are using inadequate or obsolete heating equipment. Similar obsolescence was found in the other two important functional areas of a house, the kitchen and the bathroom.

Burner Exchange Plan

Morrison Steel Products, Inc., has come up with a new merchandising plan to counteract the hesitancy of homeowners who need new furnaces in areas affected by gas restrictions. It is an exchange plan that offers immediate installation plus a quick, inexpensive, and complete conversion from oil to gas when restrictions are lifted.

Under it, each oil fired unit that is sold in a gas restricted area carries a factory certificate entitling the owner to exchange the burner anytime within two years of the original installation. When the ex-

"Nu's along the Way"

The Nu-Way Corporation
ROCK ISLAND, ILLINOIS

About Advertising and Sales

NATIONAL ADVERTISING — The four publications pictured at the left play an important part in Nu-Way's national advertising plans. With a combined circulation of more than 7,382,749, these monthlies reach the homeowner, the builder and remodeler — and Nu-Way advertisements in these books do the big job of helping sell more burners.

★ ★ ★

An argument is two people trying to get in the last word first.

★ ★ ★

LOCAL ADVERTISING AND DIRECT MAIL — Yes, Nu-Way ads build prestige for the product . . . help to make your sales easier. But this is only one part of the Nu-Way advertising program. There are newspaper ad mats (to localize your advertising), window streamers, radio spot announcements, an informative eight-page booklet and folders. First of a series of direct mail cards for Nu-Way dealers use is now available. Ask your distributor about it.

★ ★ ★

DEFINITION—A sweater girl is one who pulls your eyes over her wool.

★ ★ ★

SALES — Sales go hand in hand with advertising. That's why Nu-Way maintains a consistent advertising program. You, with the help of Nu-Way advertising, can convince your customers of Nu-Way leadership through such prominent features as Patented Air Control, etc. With a top-notch product, a ready market and a hard-hitting advertising campaign, sales of Nu-Way Oil Burners come naturally. For further information, call your Nu-Way distributor . . . or write the Nu-Way Corporation, Rock Island, Illinois.

"Automatic Oil Heat Exclusively Since 1921"

the editor's notebook

HERE'S WHY YOU SHOULD ORDER YOUR *LOCKFORMER* NOW!

1 Most models can still be delivered promptly.

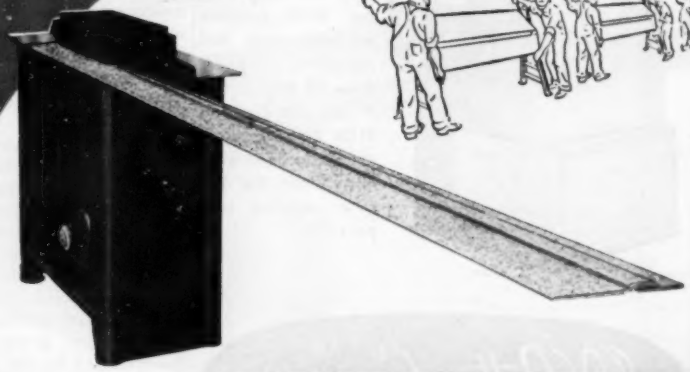
2 You can still buy a genuine Lockformer for as little as $945.00, complete and ready to operate.

3 If you're worried about the uncertain material situation, the simplest way of making sure you have a Lockformer next month or next year is to get it now.

4 Your Lockformer is a real "hedge" against inflationary labor costs. You can depend upon it to keep your fabrication costs at a rock-bottom minimum.

5 And remember that a Lockformer—new or any time—is one of the safest investments you can make ...pays you bigger "dividends" than any other shop equipment you can buy!

ONE MAN WITH A LOCKFORMER MAKES MORE PITTSBURGH LOCKS THAN SIXTEEN MEN WITH EIGHT BRAKES.



Write for the Lockformer Catalog

THE LOCKFORMER COMPANY

4615 WEST ROOSEVELT ROAD, CHICAGO 50, ILLINOIS

change is made, the customer has an AGA approved gas furnace, just as though he had bought a gas designed unit in the first place. The cost is a small exchange fee when the conversion is made.

Morrison developed this program to help its dealers combat the sales resistance encountered by all furnace men when gas companies put restrictions on space heating. Experiences of dealers who have offered their customers an opportunity to convert at a later date have found an exchange plan removes a major objection and often closes the sale.

What They Said

Joseph L. Block, vice president in charge of sales, Inland Steel Company, Chicago, at Merchandise Mart, house furnishings market press conference on raw material suppliers:

". . . Are tremendous tonnages of steel being consumed in the manufacture of guns, shells, tanks, and other munitions? By no means! The steel being used for such purposes at present is a very small part of the total supply, unquestionably less than five per cent. The true cause is the preferred treatment being accorded the so-called defense supporting industries by the government. Some months ago it was possible to name these industries. There were only about a half dozen of them, mostly in the field of transportation. Now the list has expanded enormously. To the best of my knowledge every important steel consuming industry except automobiles and home furnishings is now tabbed as defense supporting, and they are all receiving help in getting steel through priorities and CMP allotments. Reports indicate that CMP may be made all-inclusive in the fourth quarter, but at present a home furnishings manufacturer is simply out of luck. It is just as if he wanted to get into the ball park without a ticket!

"Whether unnecessary or too much assistance has been granted these industries or whether CMP was needed at all under present conditions are matters on which you and I can only speculate. The facts remain as indicated however, and the squeeze is on home furnishings and automobiles. Possibly inventories of these commodities are so large, as sometimes indicated in the press, that a temporary curtailment of manufacture would be desirable. . .

"The picture for next year is by no means equally clear. Men in high places in the government have repeatedly stated that 1952 will be a year of short supply for steel and one of substantially reduced civilian production. Although such individuals undoubtedly have access to information not available to me I nevertheless have the temerity to express a contrary viewpoint.

"Providing that there is no spread in hostilities or other adverse change on the international scene, it is my belief that during the first half of 1952 there will be more, rather than less, steel available for civilian production, and the present overall shortage may even disappear. In support of this opinion I list the following reasons:

"The capacity of the steel industry is being rapidly and steadily expanded. Ninety

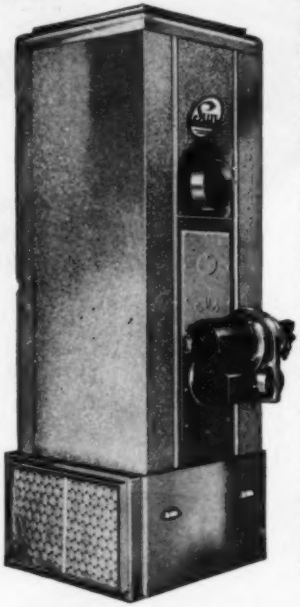
WORRY? NOT ME

. . AS LONG AS I CAN SELL

Sun FUEL MASTER

OIL-FIRED FURNACES

I've sold a lot of furnaces in my day but never as many as with the SUN line to back me up. Complete line? Man alive, SUN gives you 22 sizes and types for almost any kind of installation. I can equip the small 4½-room home with a SUN HI-BOY of 60,000 Btu capacity (shown here) to the big, long profit installations with capacity up to 224,000 Btu.



Efficient? They *have* to be. SUN heating engineers have been designing and building oil furnaces for over half a century. And not only that but SUN furnaces are *well built* and *beautifully styled*. Take my word for it, if you aren't selling SUN furnaces now, get on the band wagon. Write for the new catalog and price list.

J. V. Patten Company

SYCAMORE, ILLINOIS, U.S.A.

the editor's notebook

VAN-PACKER COMPLETE CHIMNEY

Rapid Stock Turnover

A fast moving profit item that turns rapidly means more money for you. Van-Packer is accepted and proved. The tremendous market is there. This better masonry chimney is easy to sell.

Larger Gross Profit Per Chimney

You have a larger gross profit to start with, and, in addition, you have savings of 90% or more in warehousing and handling costs. Van-Packer is a real profit maker for the dealer.

Lower Handling Cost

Costly man hours, yard and warehouse space, breakage and trucking involved in handling brick chimney supplies are all eliminated when you sell Van-Packer, the *complete* Packaged Chimney.

Immediate Delivery

You can count on *immediate delivery* from a nearby jobber. This service will become increasingly important to you.

Van-Packer FLUE . . The Complete Chimney

Also Manufactured and Distributed In Canada by C. A. McRobert and Son, Ltd., St. Laurent, Quebec

Van-Packer Corporation
Dept. 1107, 209 South La Salle Street
Chicago 4, Illinois

Please send me complete details about the Van-Packer Complete Masonry Chimney.

Name_____

Firm_____

Address_____

City_____

State_____

the editor's notebook

seven million tons of ingots were produced last year. We are now producing at the rate of 107,000,000 tons, and capacity will be up to about 112,000,000 tons by January.

"The steel required for this expansion program, quite sizeable in itself, will in the main be out of the way six to nine months hence.

"The defense supporting industries will have received so much steel through priority assistance that their inventories will become abnormally high, and their needs will be reduced.

"Direct military requirements for steel will not be as great as anticipated. A figure as high as 20 per cent . . ., sometimes cited by Washington authorities, seems unrealistic in view of our World War II experience, unless we are engaged in all-out war.

"And finally, with high taxes and credit restrictions it would seem likely that the demand for consumer hard goods would be at lower levels."

For Your Local Papers

We sometimes wonder how many contractors take advantage of the open door policy of the press throughout the country. Enterprising contractors tell us they have submitted to editors of local papers releases we have published in this column and have met with success. If this one appeals to you, simply have it retyped double space and weave in "according to John J. Jones of *Indoor Comfort* Systems, Inc." someplace in the text to identify yourself with the warm air heating industry.

There's More in Air Than Just Oxygen

What constitutes the air we breathe?

Well, chemically, atmospheric air is a mixture of gases which measures up volumetrically about as follows: Nitrogen – 78 per cent, oxygen – 21 per cent, argon – .94 per cent, and a small amount of neon, krypton, xenon and helium. But to this list of the natural properties of the air we breathe we can also add such other items as soot, coal dust, sand, and other assorted types of airborne junk.

Illustrative of how much of this foreign material actually pervades the air 'round about us are the recent findings of an outstanding research institute. This testing agency has concluded about 1950 tons of soot per square mile fall out of the air each month on Pittsburgh, approximately 1530 tons on Baltimore, 1450 tons on Chicago, 700 tons on Cleveland, 600 tons on St. Louis, 500 tons on Cincinnati, and 370 tons per month per square mile on New York City. That's a lot of soot.

If the air in which we live carries this much soot, just imagine how much dust, pollen, and other foreign material it carries. And there, Mrs. Housewife, is an answer to your question, "Where does all the dust in my house come from?" It's in the air. It infiltrates through the cracks around your windows and doors. It's brought in from the outside on clothes, shoes, and other wearing apparel of the folks that enter your house.

Can anything be done to correct this situation? Well, naturally, the ideal place to start correcting the destructive consequences of airborne soot and dust is at its source. While some forward strides have been taken in this direction by municipalities through smoke, soot, and dust abatement measures, it will still require many years before we see smokeless and sootless cities in industrial America.

Therefore, it is important that a homeowner protect his own home interiors as well as the health of his family by filtering the air circulating within his house. Air filters are standard equipment in modern winter air conditioning systems. Because winter air conditioning systems control and circulate all the air within the house, a homeowner can be assured that he is removing soot and dust from the air.

The air circulating blower of a winter air conditioning system can be operated in the summer as well as winter, performing the important service of filtering out summer dust and pollen. It also provides circulation of air which is a comfort on those hot, still days when not a leaf is stirring outside.

Sentry
REMOTE and DIRECT READING
TANK GAUGES

FOR BASEMENT TANKS: Type D-O for 2" openings, Type D-10 for 1½" openings.
For accurate, easy reading of tanks — indoors, outside or underground.
AT-A-GLANCE
OIL GAUGE
7/8 5/8 3/8 1/8
F 3/4 1/2 1/4 E
KRUEGER SENTRY GAUGE CO.
FOR UNDERGROUND TANKS: Type D-U, shown at right, for 2" openings only.
Left: Standard type At-A-Glance Gauge for direct reading at storage tank. Also available with special fitting for use and adaptation with remote gauge indicators to permit dual readings — both at tank and outside.

Dependable, Inexpensive, Weatherproof... Simple Mechanical GAUGES, Easy to Install

Accurately indicates liquid level in remote storage tanks at all times — Not affected by specific gravity oil changes or variations. Simplified mechanical operation eliminates unnecessary fittings, bulbs or levers for oil men to tamper with — no need for access to building. Can be installed for dual location readings — indoors and out. Non-corrosive stainless steel and brass extension lines connect tank float with cast aluminum, weatherproof, thermometer type indicator — calibrated in fractions. Easy to read, unconditionally guaranteed. Write for folder showing complete line.

KRUEGER Sentry GAUGES
GREEN BAY • WISCONSIN

the editor's notebook

1. AAF ENGINEERED!

Designed by the acknowledged leaders in air filtration, AMER-*glas* Filters are better filters — extra-resilient body . . . continuous, interlaced white glass filament . . . thermoplastic bond. Patented viscosine coating increases dirt-catching efficiency.

2. HOSPITAL-WHITE!

AMER-*glas* filters are "hospital-white" . . . look clean . . . outsell other leading brands on eye-appeal alone. See for yourself! Slip an AMER-glas filter in the colorful 3 dimensional display . . . then get set for extra sales, extra profits!

3. SMOOTH TO TOUCH!

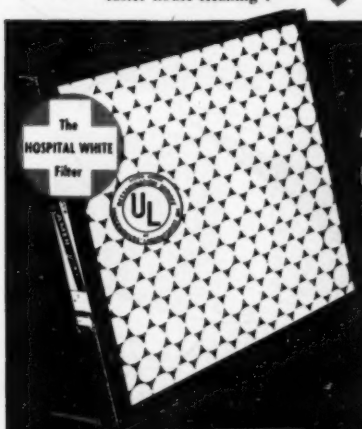
AMER-*glas* filters are easy (and more pleasant) to handle. No prickly slivers, no unpleasant odor, no "greasy feel". You and your customers too, will appreciate this clean-looking, clean-feeling replaceable filter.

4. SELLING AIDS!

AMER-*glas* filters offer complete selling aids — envelope stuffers, counter displays, window streamers, newspaper ads, radio spots. All material is customer-tested, sells "health", "fuel savings" and "easier house-cleaning".

5. BIG-VOLUME MARKET!

There is an enormous and growing market for AMER-*glas* filters right in your own back yard. More than half of all warm air furnaces now being installed are forced-air units (in some areas, nine out of ten).



AMER-*glas*

REPLACEABLE AIR FILTERS

Now used by

Mueller Climatrol

The Big Name in Heating

AMER-*glas* air filters are available to dealers through Mueller Climatrol wholesalers

Urge your customers to replace dirty filters regularly with new AMER-*glas* Filters. Inexpensive. Clean to handle, no prickly slivers. AMER-*glas* is the filter for satisfied customers . . . a new source of regular profit to you.

Mueller Climatrol

Chooses AMER-*glas*

REPLACEABLE AIR FILTERS

AAF American Air Filter COMPANY, INC. CENTRAL AVE. LOUISVILLE 8, KY.

MAIL TODAY!

AMERICAN AIR FILTER CO., INC.
355 Central Ave., Louisville 8, Ky.

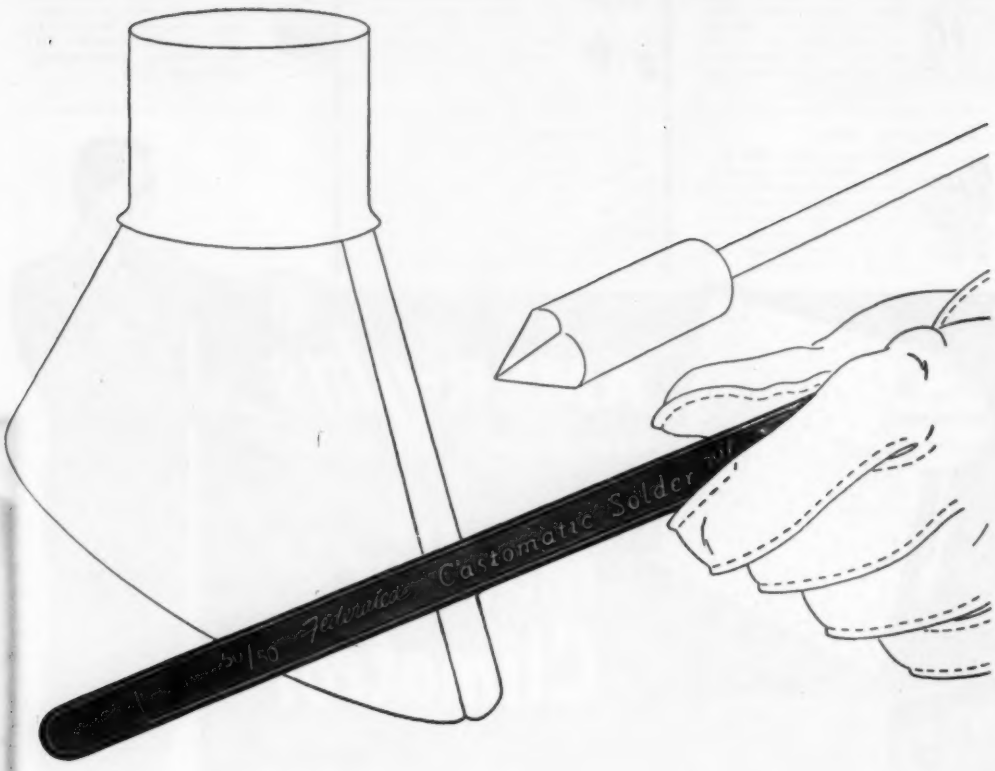
Please send me complete information on AMER-glas Replaceable Air Filters. Show me proof of the profits!

NAME_____

COMPANY_____

ADDRESS_____

CITY_____ ZONE_____ STATE_____



What Makes a MACHINE-CAST SOLDER Better?

When we say "machine-cast" we mean Federated CASTOMATIC Solder, the only bar solder cast automatically.

CASTOMATIC is better . . . patented CASTOMATIC machines make a dross-free solder . . . harmful oxides are excluded from the completely pressurized system.

CASTOMATIC is extra fine grained . . . has no voids or segregation to slow down your sheet metal work. Every bar of a given analysis melts at the same temperature . . . you work faster, more freely, without costly interruption.

CASTOMATIC solder is available in all standard sizes and compositions through your local jobber.

Federated Metals Division

AMERICAN SMELTING AND REFINING COMPANY • 120 BROADWAY, NEW YORK 5, N. Y.

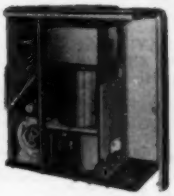
No. G-100 with Gas Burner 100,000 B.T.U. Input

No. OG-66 with Gun Oil Burner 75,000 B.T.U. at Bonnet

GRAVITY FURNACE
Gas Fired or Oil Fired

ANNOUNCING THE NEWEST Luxaire UNITS Equally Efficient WITH GAS or OIL

No. O-72 with Gun Oil Burner 85,000 B.T.U. at Bonnet



No. A 115 with Gas Burner 115,000 B.T.U. Input

BASEMENT AIR CONDITIONING UNIT, Gas Fired or Oil Fired
These units also available without vestibule and door.

Install the Unit NOW
Install the type of Burner Later
or Convert Anytime in the Future

No. OH-83-E with Gun Oil Burner 82,500 B.T.U. at Bonnet

No. H-110-E with Gas Burner 110,000 B.T.U. Input

UTILITY AIR CONDITIONING UNIT, Gas Fired or Oil Fired

COUNTER-FLOW UNIT Gas Fired or Oil Fired for Perimeter Heating or Crawl Space Heating

No. CHC-83-E with Gas Oil Burner 82,500 B.T.U. at Discharge Outlet

No. HC-110-E with Gas Burner 110,000 B.T.U. at Discharge Outlet

THE Luxaire C. A. OLSEN MANUFACTURING COMPANY • • ELYRIA, OHIO
HEATING & AIR CONDITIONING UNITS

HOW MANY OF THESE MONEY-MAKING UNITS CAN YOU OFFER?

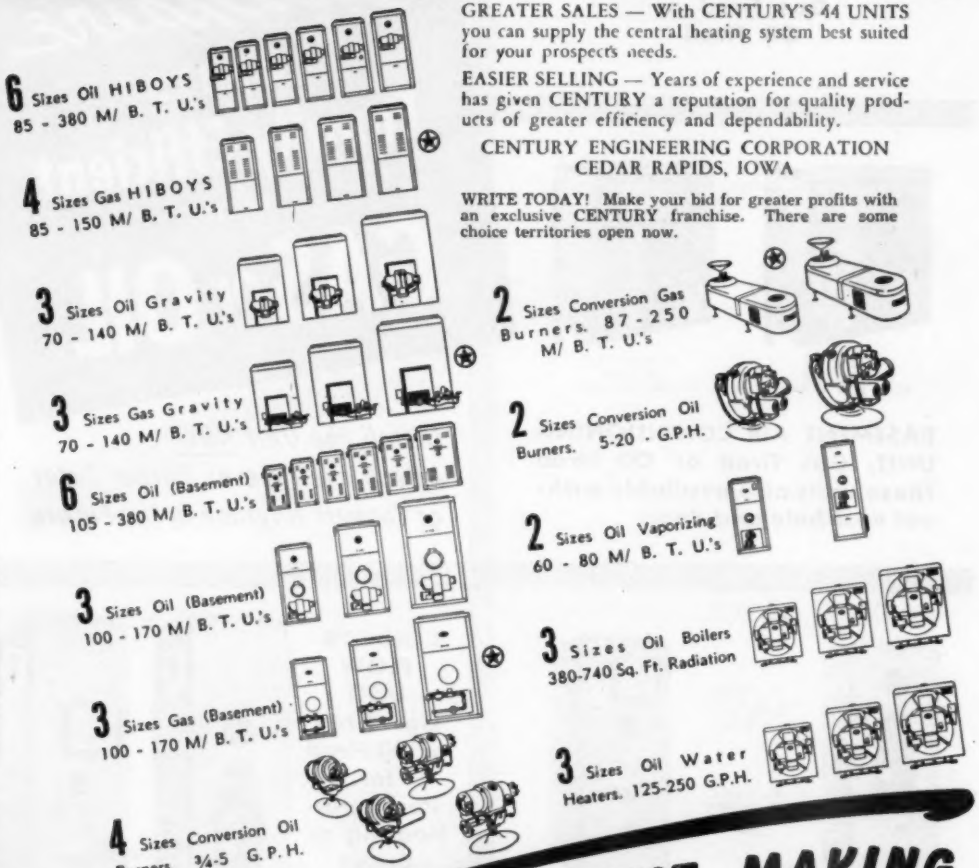
As a CENTURY Dealer, you can bid with confidence on all the profitable heating installations in both the residential and commercial fields. 44 automatic heating units offer you these advantages:

GREATER SALES — With CENTURY'S 44 UNITS you can supply the central heating system best suited for your prospect's needs.

EASIER SELLING — Years of experience and service has given CENTURY a reputation for quality products of greater efficiency and dependability.

CENTURY ENGINEERING CORPORATION
CEDAR RAPIDS, IOWA

WRITE TODAY! Make your bid for greater profits with an exclusive CENTURY franchise. There are some choice territories open now.

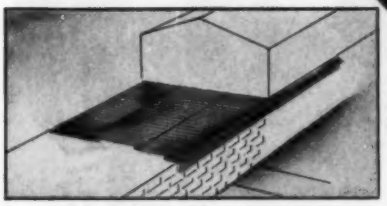

6 Sizes Oil HIBOYS
85 - 380 M/ B. T. U.'s
4 Sizes Gas HIBOYS
85 - 150 M/ B. T. U.'s
3 Sizes Oil Gravity
70 - 140 M/ B. T. U.'s
3 Sizes Gas Gravity
70 - 140 M/ B. T. U.'s
6 Sizes Oil (Basement)
105 - 380 M/ B. T. U.'s
3 Sizes Oil (Basement)
100 - 170 M/ B. T. U.'s
3 Sizes Gas (Basement)
100 - 170 M/ B. T. U.'s
4 Sizes Conversion Oil
Burners. ¾-5 G. P. H.
2 Sizes Conversion Gas
Burners. 87 - 250
M/ B. T. U.'s
2 Sizes Conversion Oil
Burners. 5-20 - G.P.H.
2 Sizes Oil Vaporizing
60 - 80 M/ B. T. U.'s
3 Sizes Oil Boilers
380-740 Sq. Ft. Radiation
3 Sizes Oil Water
Heaters. 125-250 G.P.H.

44 PROFIT MAKING CENTURY AUTOMATIC HEATING UNITS

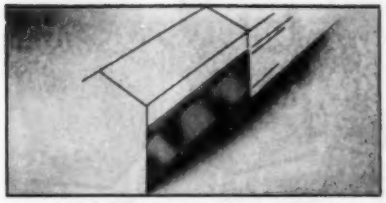
CENTURY

The Finest in Automatic Heating Equipment

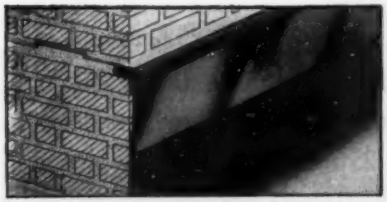
Announcing THE NEW CHASE ONE-PIECE THRU-WALL COPPER FLASHING *and* CAP FLASHING RECEIVER



DRAINAGE CONTROL. Continuous channels running transversely through the wall permit fast drainage. This feature also provides for expansion and contraction.



MORE EFFICIENT CAP FLASHING. The added rigidity of cold rolled counter flashing eliminates the necessity of locking the cap flashing to the base flashing.



CAP FLASHING RECEIVER. Locks the cap flashing securely and permanently. The Cap Flashing Receiver also provides a guide to position the flashing during installation.

Easily Installed!
Neater!
More Watertight!

Here is a full weight copper thru-wall flashing (with a 3-way bond!) that combines an integral cap flashing receiver. The design* of this receiver permits the easy installation of cap flashing *after* the base flashing and roof are installed, without plugs or wedges to keep the receiver open. And since the cap flashing is never bent after it is inserted and locked in, it can be formed of *cold rolled* copper. The result: a neater, more watertight installation at reasonable cost.

Investigate the advantages of this outstanding development for flashing building walls. Send for free folder giving details and specifications.

*Patent Pending

Chase BRASS & COPPER

WATERBURY 20, CONNECTICUT • SUBSIDIARY OF KENNECOTT COPPER CORPORATION

• *The Nation's Headquarters for Brass & Copper*

Albany†	Cleveland	Kansas City, Mo.	New York	San Francisco
Atlanta	Dallas	Los Angeles	Philadelphia	Seattle
Baltimore	Denver†	Milwaukee	Pittsburgh	Waterbury
Boston	Detroit	Minneapolis	Providence	
Chicago	Houston†	Newark	Rochester†	(†sales office only)
Cincinnati	Indianapolis	New Orleans	St. Louis	

They're Built for GAS!
They're Built for OIL!

The NEWEST

MONCRIEF

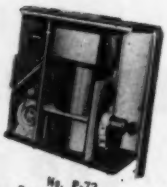
Heating Units

BASEMENT AIR CONDITIONING UNITS

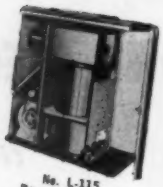
UTILITY AIR CONDITIONING UNITS

COUNTERFLOW UNIT FOR PERIMETER HEATING

GRAVITY FURNACE



No. P-72
Basement A.C. Unit
equipped with Moncrief
Gun Oil Burner
85,000 B.T.U. at Bonnet



No. L-115
Basement A.C. Unit
equipped with Moncrief
Gas Burner
115,000 B.T.U. Input

No. PW-83-E
Utility A.C. Unit
Equipped with Moncrief Gun Oil Burner
82,500 B.T.U.
at Bonnet

No. U-110-E
Utility A.C. Unit
equipped with Moncrief Gas Burner
110,000 B.T.U.
Input

No. PW-54
Gravity Furnace
equipped with Moncrief Gun Oil Burner
75,000 B.T.U.
at Bonnet

Series PHC-83-E
Counterflow Unit
equipped with Moncrief Gun Oil Burner
82,500 B.T.U. at
Discharge Outlet

Series UC-110-E
Counterflow Unit
equipped with Moncrief Gas Burner
110,000 B.T.U. at
Discharge Outlet

Series W-100
Gravity Furnace
equipped with Moncrief Gas Burner
100,000 B.T.U.
Input

MONCRIEF the COMPLETE Line—Gas Units; Oil, Gun Units; Oil, Vaporizing Units; Coal Units; Steel and Cast Iron Heating Elements; Capacities from 50,000 B.T.U. to 250,000 B.T.U.

THE HENRY FURNACE COMPANY • *Medina, Ohio*

HEATING AND AIR CONDITIONING UNITS — MONCRIEF — FURNACE PIPE AND FITTINGS

This is only ONE of the 36 *Sales* and *Profit* advantages.....

no combustion chamber

No moving parts in the Head.

Vertical High Pressure Atomizing Oil Burners

Put that extra Profit in your pocket, Mr. Dealer

MODEL A-2

Firing Rate .75 to 3.0 G.P.H.

Swirling Flame Burners do not need a Combustion Chamber. This is only one of the many different *Sales* and *Profit* Advantages this startling line of Burners offer enterprising Burner Dealers.

If you are looking for a Burner to compete with Gas, or the usual Gun Type Oil Burner, do yourself a favor... write us and learn how you may become a Swirlihg Flame Dealer.

SWIRLING OIL BURNER MFG. CORPORATION

22-15 37th Avenue, Long Island City 1, New York

Swirling Flame

THE BURNER WITH THE *Plus Advantages*

Rheem

PUTS GAS HEATING PROFITS AT YOUR FINGER TIPS!

WIN FIVE WAYS WITH AMERICA'S FASTEST-SELLING GAS HEAT LINE!

YOU CAN GIVE builders and homeowners the space savings they want. Rheem gas furnaces and winter air conditioners are world's most compact.

YOU AVOID all the work and worry of delicate adjustments. Rheem packaged furnaces are fully wired, with all controls built in—ready to operate.

YOU CAN SAVE on installation and service costs. Rheem gas furnaces come to you fully assembled and pretested. Just connect the gas and electric lines. You *know* Rheem will work without a hitch.

YOU CAN FILL any order from Rheem's *complete* line of gas furnaces. Highboys, Consoles. Floor and Wall Furnaces. Front and rear vent models.

YOU CAN BANK on Rheem's eye-appealing styles. And they're backed by national advertising in the magazines *your* customers read.

EVERY RHEEM MODEL AND PART MEETS RIGID QUALITY CONTROL

That's why your Rheem customers are lasting friends!

Really Quiet! Exclusive "Flame-Fit" combustion chamber eliminates hot spots—the cause of expansion and contraction noises.

New Angle! Rheem's unique "Angle-Flow" burner—another advanced feature for better heat distribution and noise elimination.

Summer's the time to cash in with Rheem!

Summer building is at peak. Warm weather makes heating installation easy in homes already built. So don't wait!

CALL, WRITE or WIRE YOUR HEATING WHOLESALER or YOUR NEAREST RHEEM REGIONAL OFFICE RIGHT NOW!

4361 Firestone Boulevard
South Gate, California

1025 Lockwood Drive
Houston 20, Texas

7600 South Kedzie
Chicago 29, Illinois

29-28 41st Avenue
Long Island City 1, N. Y.

Sparrows Point 19
Maryland

Guaranteed by Good Housekeeping

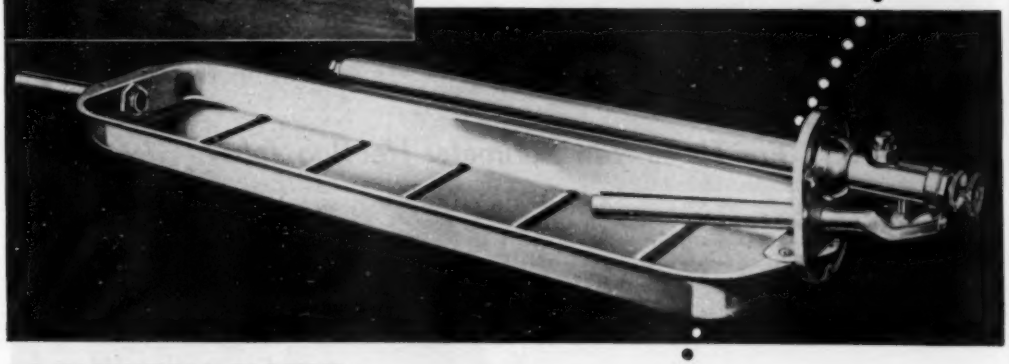
Rheem Manufacturing Co.

570 Lexington Avenue
New York 22, N. Y.

Instant Steam

FROM A SIZZLING HOT PAN ...THE MOST EFFICIENT, MOST DEPENDABLE WAY TO PUT

MOISTURE IN THE AIR . . . .



NO STAGNANT POOL TO REHEAT

Only a *thin film of water forms in pan.* Pan heats extremely fast. Water vapor is formed quickly—efficiently.

SUPER-SENSITIVE THERMOSTAT

Fool-proof. Gives *immediate response to temperature change.* Starts and stops flow of water according to bonnet temperature. Leaves only thin film of water in bottom of pan, when furnace heat goes down.

OUTSIDE SCREW ADJUSTER

Easily reached. Permits *fingertip control of water flow.* Lock nut assures hairline regulation.

EASY INSTALLATION

Pan rests directly on combustion dome for most efficient operation. Can be suspended in plenum chamber, if necessary.

ONE KIT TO PURCHASE

All accessories contained in one compact unit. Easily assembled—economical to use—quick to sell. With 12 pan sizes for any type warm air furnace.

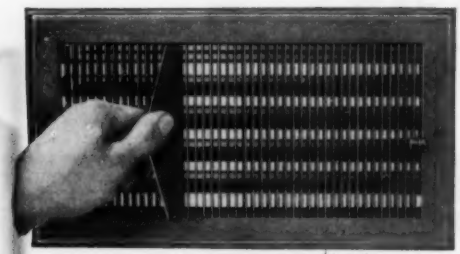
THERMO-DRIP *Automatic* HUMIDIFIERS

With the AUTOMATIC HUMIDIFIER water drips into pan only after pan is hot. Each drop sizzles into steam as it strikes heated pan surface.

This puts the MOST MOISTURE into air stream when it is MOST NEEDED. That's why Thermo-Drip gives *faster — more efficient vaporization.* Write TODAY for FREE literature. Dept. A-71

AUTOMATIC HUMIDIFIER CO. Cedar Falls, Iowa

3 *Perfect* Solutions For Today's Heating Problems



For That ULTRA MODERN

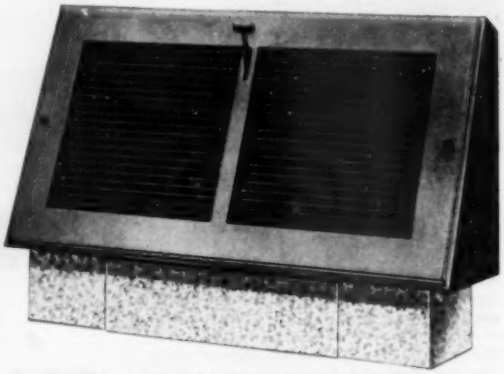
Forced-Air Conditioning System

U. S. No. 256

The 4-Way Flow Register that gives you perfect control of Air stream for every room condition. Can be installed with Square or Round-Back stackhead — air coming from left, right, back, up, or down. A beautiful, neat, modern, design with complete coverage of Air Flow through Register Grille on face. With Key-Operation (on special order) affords positive "Balancing-at-the-Register" Feature.

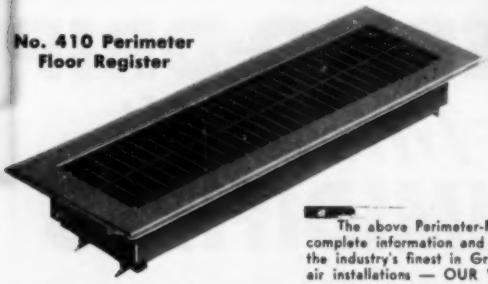
For Those New Perimeter Heating Jobs

YOUR CHOICE of U. S. No. 165 3-¾ "Out-of-Wall" baseboard registers for "old house" Forced-air systems and IDEAL for Perimeter or Radial slab-floor basementless systems — OR No. 410 Perimeter floor register, engineered especially for Perimeter and Radial slab-floor installations.



No. 165 3-¾ U.S. "Out-of-Wall"

No. 410 Perimeter Floor Register



The above Perimeter-Radial Job recommendations made in 6 standard sizes. Write for latest complete information and be sure to ask for our complete and up-to-the-minute presentation of the industry's finest in Gravity and Air-Conditioning Registers and Grilles for all types of warm air installations — OUR VERY NEWEST No. 51 POCKET EDITION CATALOG.

UNITED STATES REGISTER COMPANY

BATTLE CREEK, MICHIGAN

MINNEAPOLIS • KANSAS CITY • ALBANY

SOLD BY LEADING JOBBERS FROM COAST TO COAST

61
J.F. MULKEY COMPANY
MULKEY Leads the Field!
OVER A QUARTER CENTURY IN THE GAS and OIL COMBUSTION FIELD
Heat-Blazer
MANUFACTURERS ATTENTION!
. . . CUSTOM FLOOR GRILL PRODUCTION OUR SPECIALTY
DISTRIBUTORS NOTE:
. . . Units with Your Own Name Plates Available.
J. F. MULKEY CO.
W. 8 MILE and TELEGRAPH RDS.
DETROIT 19, MICHIGAN

M. H. ESSER
Viking Salesman, says,

"Rochester Jobbers and Dealers Find EXCLUSIVE VIKING BLOWER FEATURES *Mean Easier, Extra Profits"*

Only the Viking Blower Package has so much to offer to the jobber, the dealer, the consumer. Viking blower features — attractive appearance, modern design, advanced engineering, quality — add up to greater jobber-dealer profits.

"My Rochester Dealers Prefer VIKING Blower Packages Over All Others," says

THOMAS E. O'NEAL
District Manager
Follansbee Metal Warehouses
961 Lyell Ave., Rochester, N. Y.

"The exclusive streamlined Viking package makes them sit up and take notice. It's compact, easy to handle and warehouse. The smartly styled housing gives its own message of quality and rugged construction."

How These Dealers Are Cashing In On *VIKING* Quality

EARL SWAN
Hughs & Swan Sheet Metal Co.
73 Walnut St., Rochester, N. Y.

"The homeowner wants a blower package that insures trouble-free operation. That's what he gets with the Viking. And I don't waste my time making needless adjustment trips."

JOHN ANDRASZEK
Andraszek Sheet Metal Co.
1048 Hudson Ave., Rochester, N. Y.

"I like Viking's spring thrust take-up feature which eliminates all the headaches of thrust collars."

PHILIP CIUFO
Emerson Fuel Co.
545 Lyell Ave., Rochester, N. Y.

"One of the Viking Blower features I like best is the motor mount assembly that permits me to mount the motor outside the cabinet where it's easy to work. I can save up to 45 minutes installation time with the Viking Blower."

Viking
AIR CONDITIONING CORP.
5601 Walworth, Cleveland 2, O.

Big News for Profit-Minded Heating Dealers

Announcing

the **NEW** gas type **112**

Mueller Climatrol

Type 113 Gas-Fired Winter Air Conditioner, 90,000 and 110,000 Btu input, AGA Approved. Available with dual gas controls. Vestibule optional.

Packed With Value

- ✓ **Compact**—Shipped assembled, designed to go through almost any door. Forced air compartment factory-assembled to right of heat-exchanger, but may easily be repositioned to left on the job.
- ✓ **Heavy Welded, Steel Heat-Exchanger** — Cylindrical, with square wrap-around radiator. Up-draft, completely cleanable. Designed to eliminate expansion and contraction strain and noise.
- ✓ **[illegible] Blower** — 11" or 13", factory positioned and assembled. Top-mounted motor, cushioned on rubber. Adjustable sheave with V-belt drive.
- ✓ **Backed by the Big Name in Heating** — and 94 years of experience in producing top-quality heating equipment.

Compact, low-boy, winter air-conditioner in 90,000 and 110,000 Btu input . . . shipped factory-assembled

THIS new, low-boy, gas-fired, winter air-conditioner is tailor-made for extra sales today! *Compact* — only 51" high, 45" wide, 26" deep. It is just right for low-cost housing because it is competitively priced; and the complete unit is shipped factory-assembled on a solid steel base.

There are many built-in "extras" in the new Type 112. It is heavy steel construction . . . equipped with a large capacity blower . . . drilled-port cast-iron burner . . . and its handsome steel casing is lined with sound-absorbing, heat-reflecting asbestos which is laminated with aluminum foil. The unit is completely up-draft design with long flue-travel.

Now you can go get this business! Nothing will stop you! This quality unit is sure to please builders, architects, and home owners. Write for complete details today — *L. J. Mueller Furnace Company, 2030H West Oklahoma Avenue, Milwaukee 15, Wisconsin.* 9-121

94th Anniversary

— Mueller Climatrol

FOR GAS FOR OIL FOR COAL

WHY NOT USE THE BEST VENT TO DO THE BEST JOB?

Only METALBESTOS Meets These Important Venting Requirements!

- **Safer, More Efficient Venting**
  Metalbestos' pipe-within-a-pipe design provides a cooler, air-insulated outer pipe . . . a thin inner pipe which heats up quickly to eliminate condensation and provide a strong, continuous draft . . . and sturdy, double-sealed joints that are permanently leak-proof.

- **Simple, Low Cost Installation**
  Lightweight self-aligning sections go quickly into place . . . the special couplers are easily connected without using mastic or cement. Adjustable lengths and all-purpose fittings speed assembly and eliminate costly cutting and fitting.

- **Durable Construction**
  Made entirely from aluminum, Metalbestos will not crack or shatter during installation. It cannot be harmed by the weather and is highly resistant to corrosion from hot flue gases.

NEW VENTING MANUAL *now ready!*

Send today for free copy

This useful manual, "Venting of Gas Appliances," contains important rules for correct venting. Published in a handy, compact size, you'll refer to this valuable booklet many times for helpful tips on approved venting practices. No cost or obligation. Write today to Dept. B

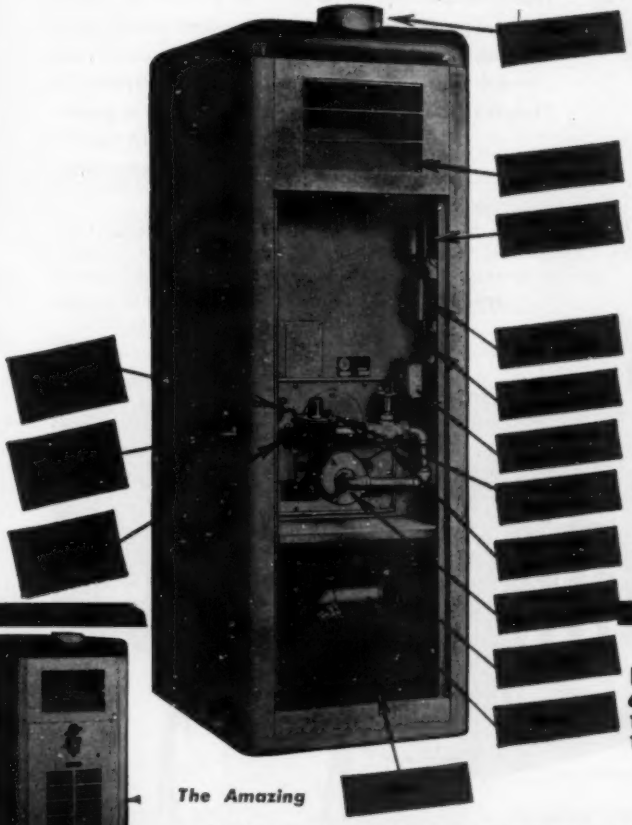
METALBESTOS DIVISION
WILLIAM WALLACE COMPANY • BELMONT, CALIF.

Now... when QUALITY counts even more, You Can Count on the Complete SECURITY LINE

Yes, QUALITY has been the rule at Security for over 45 years . . . and will continue to be! Assure your customers of high efficiency performance, long years of service. Materials will be the best obtainable . . . workmanship will be by long-experienced Security craftsmen.

Security . . . is more quickly, easily installed. A type and size for every gas-fired heating requirement in the home.

Security offers automatic gas-fired heating for every home purpose. New, shallow "Chubby" Floor Furnaces (above), revolutionary new INN-A-WALL series for compact forced air heating (left), and a complete selection of forced air and gravity furnaces. Security's Heavy Duty Water Heaters are long famous for efficiency, economy and long life.



Highest Efficiency with L-P Gas, Too!

Your customers can enjoy all Security products away from the city mains with L-P (Bottled) Gas. Simple, safe, efficient. And so very convenient!

INPUT . . .
62,500, 80,000 100,000 and 125,000 BTU.

The Amazing

TWO-IN-ONE FURNACE!

Eliminate duplicate stock! Here's a factory-assembled, packaged forced-air gas-fired furnace that does every job. In closet or basement, this Security SFA series is ready to go into service on arrival.

All controls are located in one compartment. Quick adjustments, easy replacements are expedited without disturbing other wiring. Return air duct connector for basement application is shipped knocked down. Attached to rear or sides in a jiffy. Built in filter racks.

Get all the facts — specifications, prices, discounts. Write today!

Security Mfg. Co., 1630 Oakland Ave., Kansas City 3, Mo.

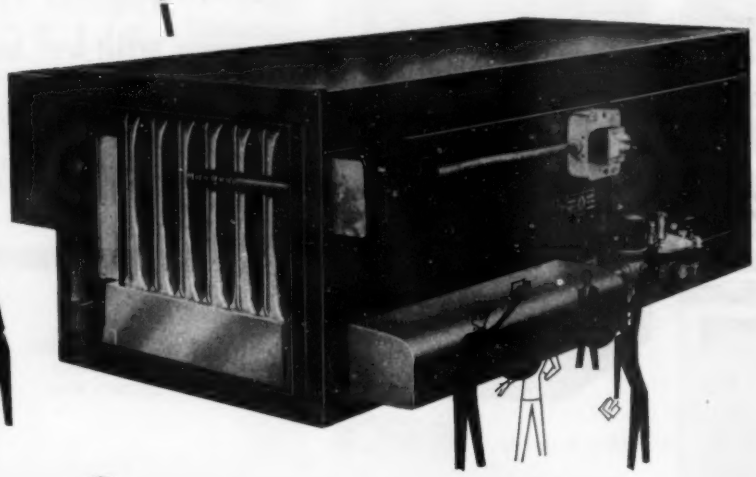
FOR CLOSET INSTALLATION

FOR BASEMENT INSTALLATION

"here's a furnace all my dealers like to handle"

Jobbers throughout the nation report that SEQUOIA's 1950-introduced Horizontal Series has proved one of their most popular sellers. Few other gas-fired furnaces are as economical in installation space required — none exceed in user satisfaction with its daily operating performance. There is a factory representative in your territory to provide full information about all SEQUOIA furnaces ... write for his name today.

now available in 4 sizes! Ready for distribution is Model H-150 ... the new 150,000 BTU Sequoia Horizontal with 27½" x 19½" x 62⅝" over-all dimensions. Also available in space-saving 80,000, 100,000 and 120,000 BTU models. Complete literature on request.

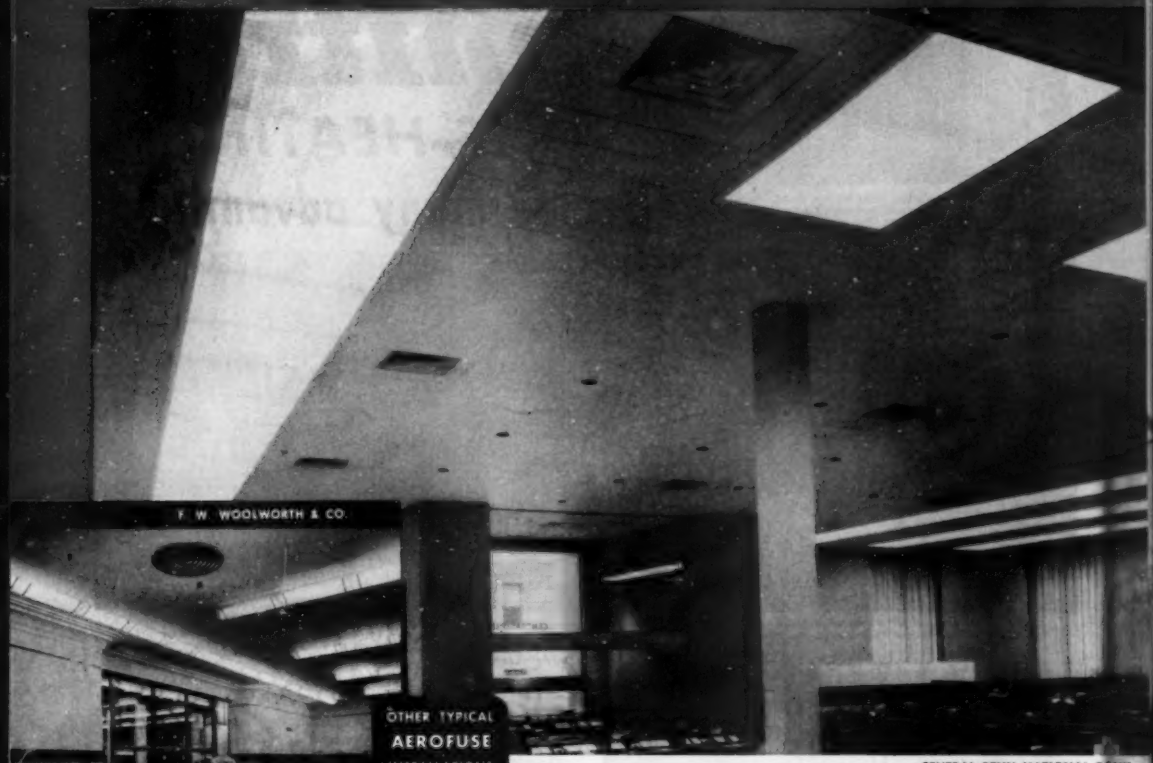


a name to remember!

SEQUOIA MANUFACTURING COMPANY

1000 Brittan Avenue • San Carlos, California

Aerofuse IN PHILADELPHIA



GIMBEL BROTHERS

GOLDMAN THEATRE

CENTRAL PENN NATIONAL BANK

OTHER TYPICAL **AEROFUSE** INSTALLATIONS IN THE PHILADELPHIA AREA

- Philadelphia Inquirer
- Sharp & Dohme
- John Wanamaker
- Rittenhouse Claridge
- Segre Junior High School

Whether you shop, work or relax in air conditioned comfort in the Quaker City, there's a good chance that Aerofuse Diffusers are there, too. For, as in other cities the country over, important air conditioning jobs in historic Philadelphia are Aerofuse jobs. In department stores, theatres, banks, offices, etc.—where conditions and requirements vary widely—the men responsible for these installations know from experience that when they select diffusers from the Aerofuse line they will meet the most rigid specifications of performance and appearance . . . *at the vital point of air delivery.*

Send for your copy of Aerofuse Catalog 104 . . . complete information, size selection data, engineering details.

TUTTLE & BAILEY inc

NEW BRITAIN, CONNECTICUT

High Schools Switch to

®Janitrol GAS-HEATING

Brings many advantages

High School at Paden City, W. Va. is typical of several schools recently converted to automatic Janitrol Gas Heating.

Series of five Janitrol SC-05 Burners make a compact conversion with a minimum of installation work in Paden City High School.

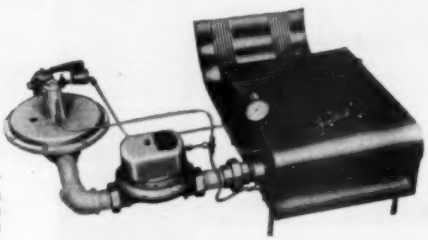
Installation in High School Bridgeport, W. Va.—10 Janitrol SC-05 burners provide an input rating up to 7½ million Btu/hr. Contractor: Joseph Isquinta and Sons.

Unusual construction of American Warming and Heating Furnaces in Jackson School, Bellvue, Pittsburgh proves no conversion problem through use of Standard Janitrol SC-05 Burners—Installation by Weber Company.

Other management people of schools, public buildings, apartments and industrial buildings can learn a profitable "lesson" from the experience of several high schools in converting to gas heating.

Among the many advantages of gas as a fuel and Janitrol as the preferred equipment the following benefits should interest your prospects:

Lower fuel cost. More efficient use of fuel. Quick, economical installation with standard Janitrol equipment. Completely automatic operation with no fuel to store or combustion residue to haul away. Positive safety protection and proved performance. Full acceptance by Underwriters, American Gas Association and Gas Utilities.



The Janitrol Model SC-05 Conversion Burner is designed for conversion installations which require input capacities from 325,000 up to 750,000 Btu per hour. Flexibility of installation for furnace or boilers with an ashpit opening not less than 15-1/8" wide by 7-5/32" high, and in which the depth of the burner throat does not exceed 4" permits use in a wide variety of applications.

For more complete specifications and information, write for bulletin HCB, and "Spec." Sheet JS162.

SURFACE COMBUSTION CORPORATION, TOLEDO, OHIO • ***Offices in Principal Cities.***

Janitrol Gas Heating Equipment includes Winter Air Conditioners, Gravity and Floor Furnaces, Boilers, Unit Heaters, Conversion Burners.

THE ONLY

Set it on the job . . . for any current from .4 to .8 amps!

Serviceman acceptance of the Perfex Series 175A adjustable heater type thermostat has been growing steadily.

No longer is it necessary to carry an assortment of heaters. No longer is it necessary to compromise within the amperage range of the individual type heater. You can set the Series 175A for the *exact artificial heat* you need for the job!

The adjustable heater is another Perfex first in a campaign to make installation and service of heating controls easier and faster.

If you haven't tried it yet, see your nearest Perfex Distributor or write us.

PERFEX

CONTROLS YOU CAN TRUST

PERFEX CORPORATION, MILWAUKEE, WISCONSIN

In Canada, Perfex Controls Ltd., Guelph, Toronto 1

Free, Perfex sponsored, Heating Controls Training Schools have been scheduled for July and August. See your nearest Perfex Distributor.

MORE PEOPLE TO HELP YOU . . . (expanding distributor network)

LESS SERVICING FOR YOU (in the home)

WYSONG No. 1252
Capacity: 52", 12 ga., mild steel. 16 ga., stainless steel.

Save Money WITH WYSONG'S 12 GAUGE SERIES

If most of the sheets you shear are 12 gauge or less, you now can get an economical 12 gauge shear to meet your requirements.

To insure top performance at a 12 gauge rating, Wysong 12 gauge series are all tested at the factory on *10 gauge* sheets. Made in 52-inch, 6 foot, 8 foot and 10 foot cutting lengths, one of these economical shears meets the full shearing requirements of most sheet metal shops.

STANDARD EQUIPMENT INCLUDES . . . Motor with controls and electrical equipment; ball bearing, precision Back-Gauge; embedded, adjustable, stainless steel Scale; slotted metal Finger Guard; Non-Repeat Unit; and 4-edge Blades.

Rigid Wysong *Hi-Tensile* Casting construction is combined with time saving features to give speed and accuracy in operation, plus many years of satisfactory service.

Each Wysong shear is tested for 24-hours of operation before leaving the factory and is shipped *completely equipped* and ready for continuous operation.

THE WYSONG 12 GAUGE SERIES

No. 1252 . . . 52 inch cutting length
No. 1272 . . . 6 feet cutting length
No. 1296 . . . 8 feet cutting length
No. 1210 . . . 10 feet cutting length

Wysong builds a complete line of Air, Foot and Motor powered squaring shears for the Sheet Metal Shop. See your dealer or write for Catalog No. 44.

WYSONG and MILES Co.
GREENSBORO, NORTH CAROLINA

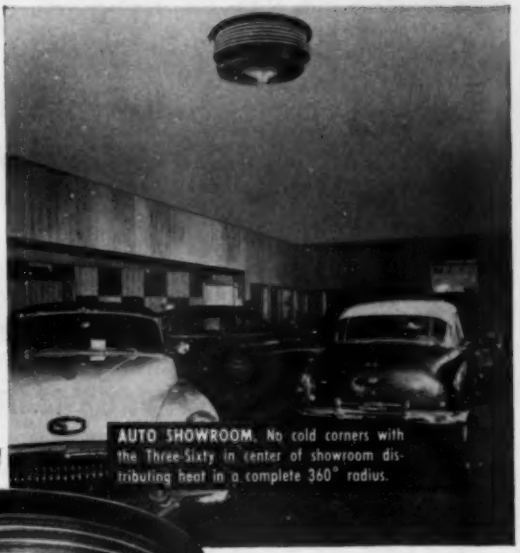
STEP AHEAD WITH THE *Norman Three-Sixty

THE FINEST IN OVERHEAD GAS HEATING FOR

- Stores
- Shoppes
- Gas stations
- Offices
- Factories
- Small buildings
- 101 other overhead heating applications

The new circular design Norman Three-Sixty assures better, more comfortable circulation of heat over entire area . . . more attractive appearance for modern stores . . . simplified installations and servicing . . . countless other advantages never before possible with a suspended heater. Send for new illustrated folder just off the press. Mail coupon today to receive your free copy by return mail.

Copyright 1951 by Norman Products Company, Columbus, Ohio
* Trade Mark Registered

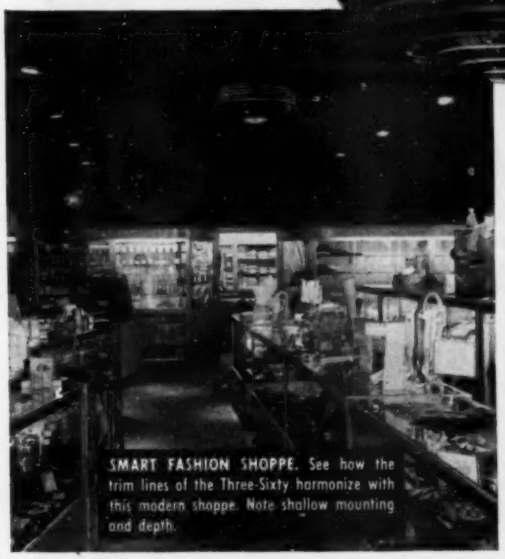


AUTO SHOWROOM. No cold corners with the Three-Sixty in center of showroom distributing heat in a complete 360° radius.

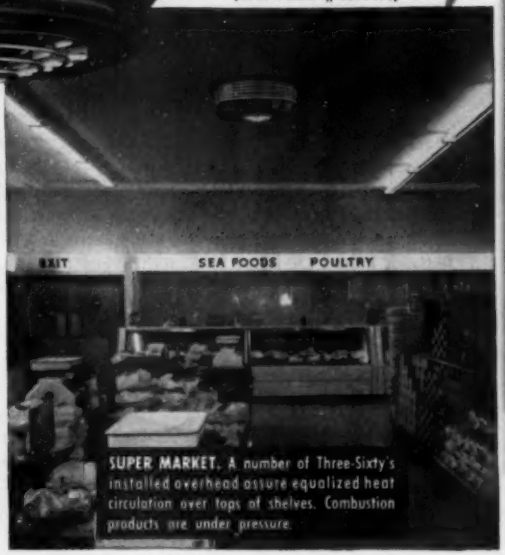
FORCED CONVECTION OVERHEAD GAS HEATER DISTRIBUTES HEAT HORIZONTALLY IN 360° RADIUS

Norman Three-Sixty

(U. S. Patent #2519496)



SMART FASHION SHOPPE. See how the trim lines of the Three-Sixty harmonize with this modern shoppe. Note shallow mounting and depth.



SUPER MARKET. A number of Three-Sixty's installed overhead assure equalized heat circulation over tops of shelves. Combustion products are under pressure.

STEP AHEAD WITH THE NORMAN SOUTHERNER FOR LOW COST, SPACE-SAVING INSTALLATIONS

The quality-built Norman Southerner is the original compact horizontally designed forced-air gas furnace. Fits in attic, basement, closet, utility room, under floor. Guaranteed for 10 years. Thousands in use. 4 sizes, 40,000 BTU to 100,000 BTU.

NORMAN PRODUCTS CO., Dept. A4
1148 Chesapeake Ave., Columbus 12, Ohio

Please rush literature giving complete details and specifications on:

☐ Norman Three-Sixty ☐ Norman Southerner

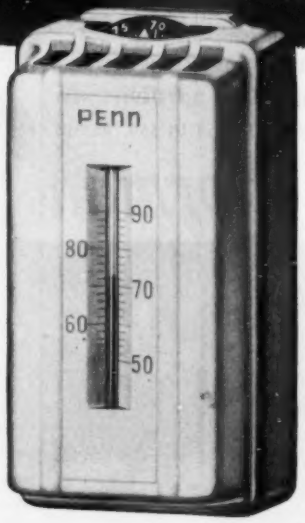
NAME_____

FIRM NAME_____

ADDRESS_____

CITY_____ ZONE____ STATE_____

HOT-n-COLD LIVING



It's a simple little wire but it produces *heat anticipation*... the man-made magic which enables the PENN room thermostat to *stop* HOT-n-COLD LIVING.

Here's a thermostat that adjusts itself automatically to outside temperature changes. It commands the burner to balance heat in-put with heat loss. It keeps room temperatures within one-half degree of the selected level. And that's the kind of comfort your prospects *want!* Give it to them with the PENN *heat-anticipating* thermostat... the thermostat that *gives you a big sales advantage* in selling automatic heat.

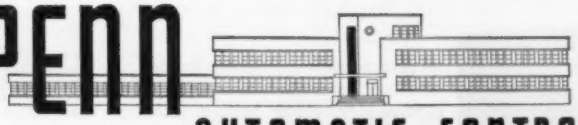
Next time you need automatic controls... room thermostats, primary controls, limit switches, and day-night electric clocks... *specify* PENN. There's nothing better for controlling heating systems of *every type* with *every kind of fuel*. Ask your burner manufacturer, wholesaler or write to **Penn Electric Switch Co., Goshen, Indiana.** Export Division: 13 E. 40th Street, New York 16, N. Y., U. S. A. In Canada: Penn Controls Limited, Toronto, Ontario.

FREE SALES AIDS

Penn consumer advertising is telling your prospects how to avoid HOT-n-COLD LIVING. Cash in on this campaign... write for FREE sales aids and you can change the "warm-weather slump" into profitable automatic heating sales.

BETTER HOMES & GARDENS
AMERICAN HOME
NEWSWEEK

PENN



AUTOMATIC CONTROLS

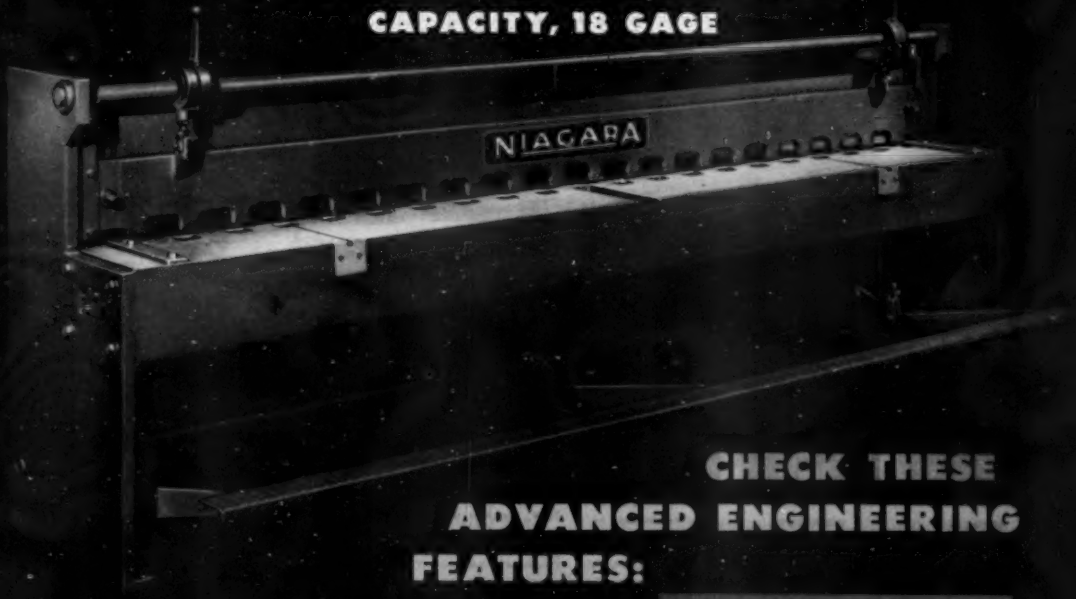
FOR HEATING, REFRIGERATION, AIR CONDITIONING, PUMPS, AIR COMPRESSORS, ENGINES, GAS RANGES

NIAGARA

Presents America's Most Modern 96" and 120"

FOOT SHEARS

CAPACITY, 18 GAGE



CHECK THESE ADVANCED ENGINEERING FEATURES:

- Unbreakable steel construction
- Easy lively action
- Visibility of cutting line
- Distinctive styling
- Closed box section bed and closed triangular section crosshead providing strength and rigidity
- Lifetime bronze crosshead ways and treadle bearings
- Massive steel plate housings keyed and bolted to bed
- Full length non-slip treadle

Ask for Bulletin 80 F-A

BALL BEARING, SELF-MEASURING, PARALLEL BACK GAGE is standard equipment. Double arm back gage is quick and easy to adjust. Graduated to 1/128". Simple change for taper cutting.

NIAGARA MACHINE & TOOL WORKS • BUFFALO 11, NEW YORK

DISTRICT OFFICES: DETROIT • CLEVELAND • NEW YORK

Schaefer BRUSHES

FOR PLUMBERS...FURNACE MEN...HEATING CONTRACTORS

Performance tested, SCHAEFER Brushes offer longer wear, better service, greater value—with the *correct* brush for every industrial and domestic use.

SCHAEFER Flue and Boiler Brushes of SILVER BRITE Rustproof Wire

SCHAEFER'S special alloy "Silver Brite" rustproof spring steel wire has been developed for longer wear, more effective cleaning. It offers extra value, extra satisfaction in any brush.

SCHAEFER Rectangular Flue Brushes

No. 8-415—2"x4"x4½"
No. 8-416—3"x5"x4½"

SCHAEFER Boiler Brushes

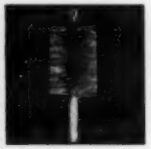
No. 8-393—1¾"x4"x5½"
No. 8-394—2½"x6"x8½"
No. 8-395—3½"x6"x8½"

SCHAEFER Boiler Brushes

No. 8-396—1¾"x4"x4½"
No. 8-201—2½"x6"x4½"
No. 8-202—3½"x6½"x 4½"

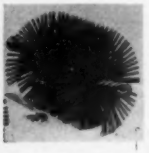
SCHAEFER Boiler Brushes

No. 8-399—2"x4"x6"
No. 8-400—3½"x4½"x6"
No. 8-401—3"x5"x6"



Single and Double Spiral Flue Brushes

No. 8-432—Single Spiral —1" to 4" dia.
No. 8-433—Double Spiral —1" to 4" dia.
No. 8-434—For small Flues, ¾" to 1" dia.

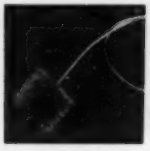


SCHAEFER Round Flue Brushes of Single Spiral, Flat Steel Wire

No. 8-430—1" to 4" dia.

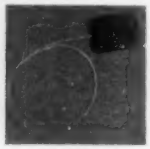
SCHAEFER Rectangular Flue Brushes of Flat Steel Wire—Spiral

No. 8-420—2"x3¼"x4"
No. 8-425—3¼"x5¾"x7"



SCHAEFER Furnace Brushes of Silver Brite Rustproof Steel

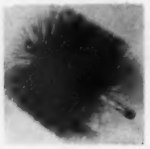
No. 8-442—3", 4", 4½", 5" with 5 ft. handle.



SCHAEFER Fibre Furnace Brushes

Selected Bassine fibre, flexible wire stem, 4", 5", 6" dia., 48" and 60" handle.

No. B-444-445



SCHAEFER Chimney Cleaning Brushes

No. 66—6", 7", 8", 10" and 12" dia. round style of Black Tempered Brush Wire.
No. 666—6", 7", 8", 10" and 12" dia. oblong style of Flat Tempered Steel Wire.

SCHAEFER Wire Wheel Brushes

Solid Center Type of crimped steel wire.
No. 276—6" dia. x 1⅝" face.
No. 278—8" dia. x 1⅝" face.
No. 280—10" dia. x 2" face.

SCHAEFER Handy Wire Brush

No. 816 — For roughing, soldering etc., 6" long. tempered steel wire trimmed 1½".

Tin Handle Acid or Dope Brushes

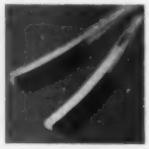
Selected grade bristles in tin ferrule. Width, ⅝", ½", ⅝".

T. W. Flat Acid Brushes

Tinners soldering brush, horsehair filling, 1¼" width, 7½" overall. Twisted wire handle.

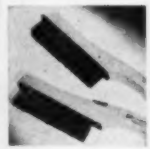
Radiator or Condenser Tube Brushes

Twisted in wire handle, selected hair or bristle. Wide range of sizes.
No. 14—⅜" dia. x 2" brush x 6⅝" overall.
No. 11—½" dia. x 3" brush x 8⅜" overall.



SCHAEFER Curved Handle Wire Brushes

No. 810 — Oil tempered steel wire, trimmed 1¼", hardwood block, 14" long. Brush 6", 2, 3 or 4 rows.



SCHAEFER Shoe Handle Wire Brushes

No. 812 — Oil tempered rustproof wire, 5" brush, 2, 3, 4 rows. Trim 1¼". overall 10".

SCHAEFER Straight Back Wire Brushes

No. 806-11—Oil tempered steel wire. Hardwood block, 7½" x 3¼". Wire trim, 1⅝", 6 x 19 rows.

SCHAEFER Vacuum Cleaner Brushes

No. 1005—Bassine Fibre Brush, 10½" dia. tapered to 3" dia. x 6 ft. long—48" handle with threaded nipple at end.

No. 1000—Bassine Fibre Brush, 10½" dia. brush x 10" long. Handle 20" with threaded nipple at end.

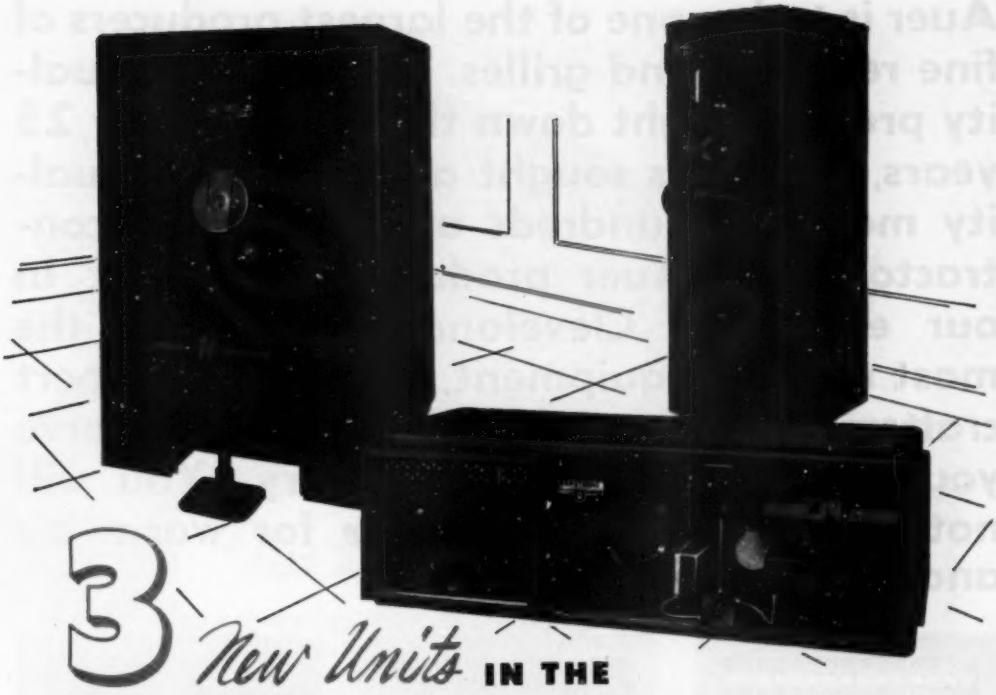
Wire Flue Brush and Extension Handles

4 ft. Handles with Nipple and Coupling.
5 ft. Handles with Nipple and Coupling.
6 ft. Handles with Nipple and Coupling.

Write for SCHAEFER Catalog of flue and furnace brushes, or for information on any special brushes for specific requirements.

SCHAEFER BRUSH MFG. CO.

117 W. Walker Street Milwaukee 4, Wisconsin



3 *New Units* IN THE

EVER-EXPANDING ARMSTRONG OIL FURNACE LINE

HORIZONTAL • GRAVITY • SMALL HI-BOY—ALL GUN-FIRED

These three new Armstrong units are all fired by the new Armstrong D4 oil burner, developed especially for efficient operation at low firing rates. All have the Armstrong oil-designed heating element; all are beautifully finished in two-tone blue baked enamel.

A new horizontal! The L8-80, with 80,000 BTU bonnet output. Assembled at the factory—you simply install the combustion chamber and the burner. Filter frame provided for cold air return to front, rear or end of blower compartment.

A new hi-boy! The L6-80; 80,000 BTU output at the bonnet. Factory assembled. Ideal for utility room or closet installation. Cold air return from bottom or either side; filter racks in all three places. Blower slides forward for easy service.

A new gravity! The L2-100, rated at 100,000 BTU at the bonnet, and equally efficient with a ¾ GPH firing rate for 75,000 BTU. Excellent for the compact home. Efficient. Easy to install.

Remember, these are just the *new* members of the Armstrong gun-fired oil furnace line, which includes units of practically all sizes and types. Armstrong offers a complete selection of gas and coal furnaces, too.

See your nearby Armstrong jobber, or write for complete details on any Armstrong unit.

Wherever you are

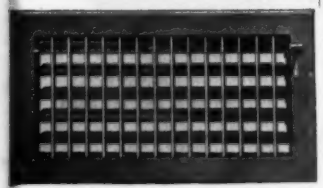
YOU'RE ON THE ARMSTRONG MAP

ARMSTRONG
FURNACE COMPANY

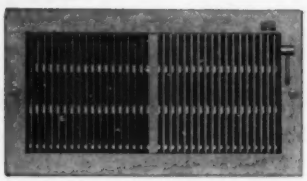
COLUMBUS, OHIO

DES MOINES, IOWA

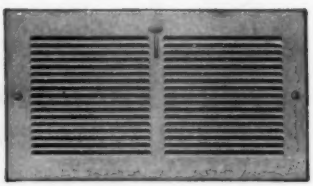
Auer is today one of the largest producers of fine registers and grilles. Turning out quality products right down the line, for over 25 years, Auer has sought and secured a quality market. Hundreds of dealers and contractors buy Auer products exclusively. In our expanded Cleveland plant, with the most modern equipment, manned by expert craftsmen, we are as well qualified to serve you as anybody in the industry. You will note that our line is *complete* for warm air and air conditioning.



No. 1005V-HML—Streamliner Register with single bank of vertical bars, multi-louvre shutters



No. 4432—Airo-Flex Multi-valve Register—4-Way Directional



No. 7032—Airo-Flex Single Valve Register—Adjustable Fins

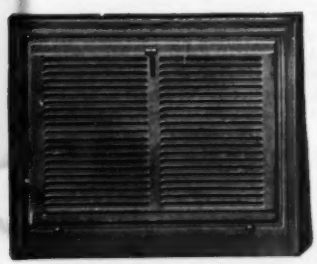


Fig. H-800—Heat-Rite Baseboard Register

Fig. DSC—DuraBilt Grille
Also ideal for floor furnace use

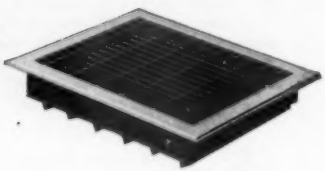


Fig. DR—DuraBilt Floor Register

Why not buy all your register needs from one dependable source of supply? Genuine Auer registers are made ONLY by The Auer Register Co. Ask for complete Auer Register Book, or Catalog "G" on perforated grilles.

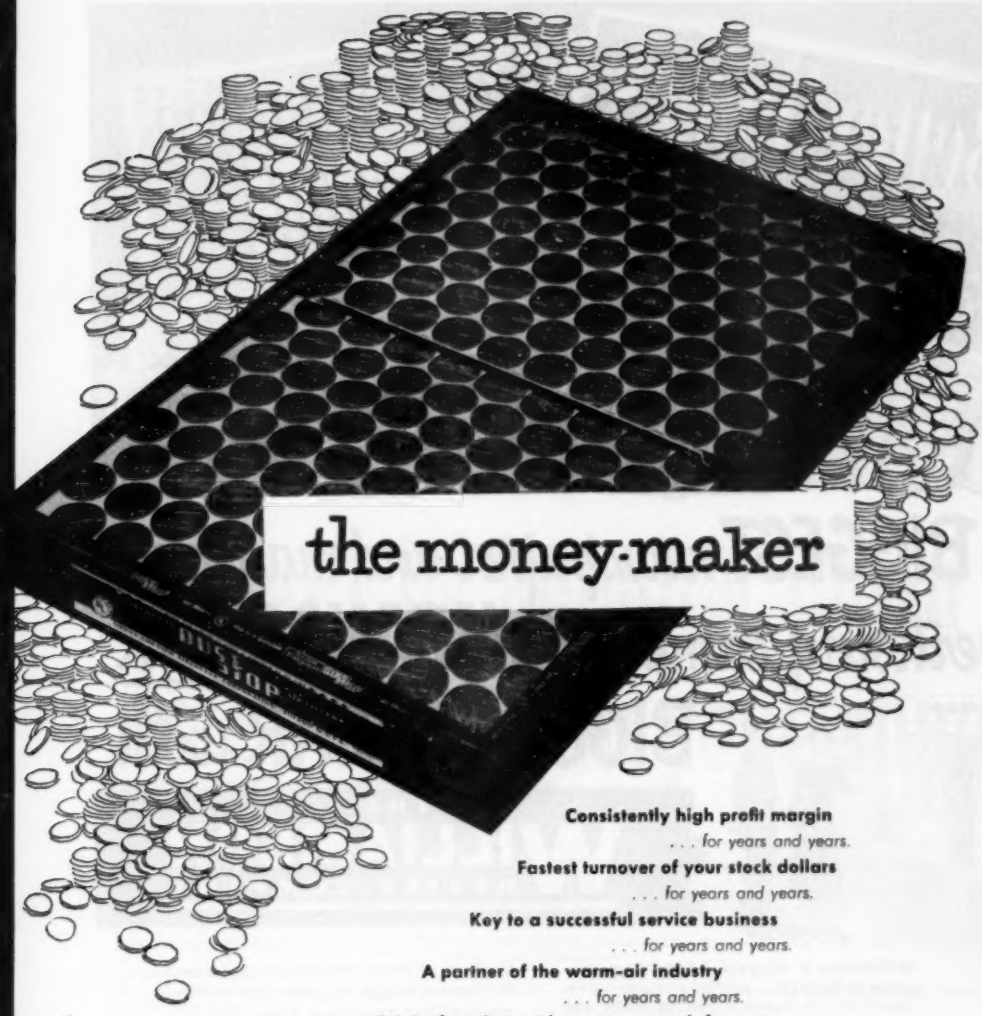
THE AUER REGISTER COMPANY

6600 CLEMENT AVE. CLEVELAND 5, OHIO

CANADIAN DISTRIBUTOR, MARCHAND FURNACE LTD., TILBURY, ONT.

Auer REGISTERS

& GRILLES *for* AIR CONDITIONING & GRAVITY



the money-maker

Consistently high profit margin
. . . for years and years.

Fastest turnover of your stock dollars
. . . for years and years.

Key to a successful service business
. . . for years and years.

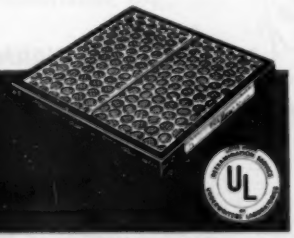
A partner of the warm-air industry
. . . for years and years.

Original equipment in most warm-air furnaces
. . . for years and years.

Aggressively advertised to the public
. . . for years and years.

Field-tested selling helps, free
. . . for years and years.

The filter it pays you to promote
. . . for years and years.



OWENS-CORNING
FIBERGLAS

DUST STOP

Watch for announcement next month of the largest Fall-Winter Promotion in DUST-STOP history!

*FIBERGLAS and DUST-STOP are trade-marks of Owens-Corning Fiberglas Corporation for products made of or with fibers of glass.

The BIGGEST newspaper and magazine advertising campaign MEANS YOUR BIGGEST YEAR with

THE WILLIAMSON HEATER COMPANY

Williamson's biggest advertising program in history . . . powerful, color advertising in the nation's leading home and farm magazines plus cooperative newspaper advertising . . . can mean more profits for you.

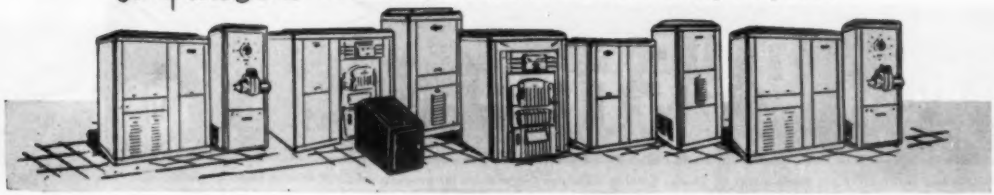
Here's the one-two-three pay-off punch: ***First,*** a severe winter means thousands of furnaces need replacing. ***Second,*** Williamson advertising searches out these ready-to-buy prospects. ***Third,*** The Williamson **Complete Line** . . . gas, oil and coal furnaces and pipe and fittings . . . lets you sell "the One Right Heating System" for any size home—new or old.

Get the profit-making facts today. Write, phone or wire today.

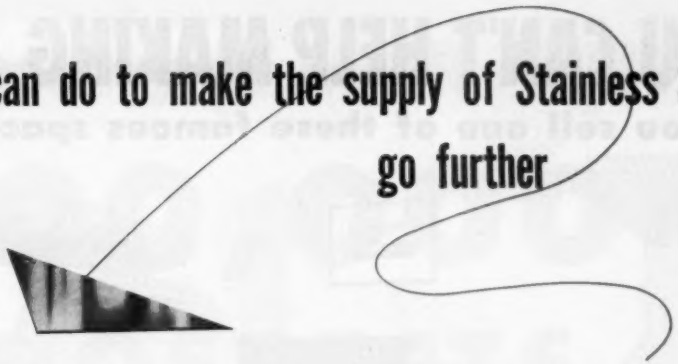
THE WILLIAMSON HEATER COMPANY, CINCINNATI 9, OHIO

"Heat to your heart's content"

Complete Line **WARM AIR FURNACES FOR GAS, OIL, COAL**



What you can do to make the supply of Stainless Steel go further



Make full use of the steel you get by keeping down scrap losses in your shop

Keep these points in mind, too, when you order Stainless

Tell your supplier exactly where you'll use Stainless and how you'll fabricate it.

Minimize scrap losses at the mill by ordering the exact sizes that you will use.

Indicate, if possible, acceptable alternates in composition, gage and finish.

Holding your own scrap losses to a minimum to make the fullest use of the steel you receive is good shop practice anytime. It's especially important today.

Here are a few suggestions that may help you stretch your supplies. See that they are followed. Add other rules that your operations may dictate.

1. **Lay out your jobs to use steel as economically as possible. Then order to the closest possible size.**
2. **Keep your stock of Stainless Steel carefully separated by grades.**
3. **In your storage areas, make sure that surface finishes are protected properly.**
4. **Lay down strict rules for careful fabrication and handling. It will help you reduce rejections.**

No matter how carefully these rules are followed, there'll always be a certain amount of scrap. To keep new steel flowing to you, get your scrap back into circulation as quickly as possible by *promptly* turning in every pound to the mills.

AMERICAN STEEL & WIRE COMPANY, CLEVELAND · COLUMBIA STEEL COMPANY, SAN FRANCISCO
NATIONAL TUBE COMPANY, PITTSBURGH · TENNESSEE COAL, IRON & RAILROAD COMPANY, BIRMINGHAM · UNITED STATES STEEL COMPANY, PITTSBURGH
UNITED STATES STEEL SUPPLY COMPANY, WAREHOUSE DISTRIBUTORS, COAST-TO-COAST · UNITED STATES STEEL EXPORT COMPANY, NEW YORK

USS

U·S·S STAINLESS STEEL

SHEETS · STRIP · PLATES · BARS · BILLETS · PIPE · TUBES · WIRE · SPECIAL SECTIONS

1-951

UNITED STATES STEEL

YOU CAN'T HELP MAKING MONEY

If you sell one of these famous space heaters

ALLEN'S
BARNES
BEYER
COLE HOT BLAST
COLEMAN
COLEMAN *(Canada)*
CREST *(Canada)*
CUSTOM-AIRE
DUO-THERM
ENTERPRISE
ENTERPRISE *(Canada)*
ESTATE-HEATROLA
FINDLAY *(Canada)*
FLORENCE
H. C. LITTLE
HERCO *(Canada)*
INTERNATIONAL
JUNGERS
LACO
LONERGAN
MAGIC CHEF
MONARCH
MONARCH *(Canada)*
MONOGRAM
NESCO
NORGE-HEAT
PERFECTION
PREWAY
QUAKER
SAFEWAY
SIEGLER
SILENT FLAME
SUPERFLAME
TORRIDAIRE
WASHINGTON FRUGAL

PLUS ALL THE LUXURY OF AUTOMATIC HEAT — WITH LOW-COST, EASY TO SELL A-P COMFORT CONTROLS

Yes, if you sell one of the famous-make space or trailer heaters listed here you can offer every customer the luxury of true automatic, thermostatically controlled heat! This means easier selling, because you can offer comfort and convenience equal to the most expensive kind of heating, with no wasted heat — and substantial fuel savings!

What's more, this easy-to-sell comfort means ADDITIONAL PROFITS for you. Write now for Bulletin T-2 on A-P Comfort Controls.

EASY TO INSTALL

There's an A-P Electric or Mechanical Comfort Control actually engineered to fit these heaters. Just mount conversion top on present manual control; connect to thermostat and transformer. Mechanical thermostat even eliminates wiring!

DEPENDABLE Controls

Famous for completely reliable service . . . in oil heating . . . gas heating . . . refrigeration.

A-P CONTROLS CORPORATION

(formerly Automatic Products Company)

2452 N. Thirty-second Street • Milwaukee 45, Wisconsin • In Canada: A-P Controls Corporation, Ltd., • Cookville, Ontario

How many of MOR-SUN's 500,000 PROSPECTS are YOURS?

"Sunny" MOR-SUN introduces a 1951 Replacement Sales Campaign . . .

a complete nationwide promotional program!

MOR-SUN presents another first in the home heating industry . . . *the 500,000 PROSPECT plan!*

Now, from coast to coast, every MOR-SUN representative is presenting this powerful plan to all MOR-SUN Merchandisers . . .

Yes, this sensational New 1951 Replacement Sales Campaign is geared to *turning 500,000 live prospects into purchasers!*

How many of them will be yours?

MOR-SUN FURNACE DIVISION
MORRISON STEEL PRODUCTS, INC.
625 AMHERST ST. • BUFFALO 7, N. Y.

Get on this nationwide profitable handwagon . . . Phone or wire us for details.

"Sells on MOR-SUN PRESSED STEEL FURNACES *Sight"*

*** 2,800,000 C.F.M. . . . 120 AIR CONDITIONING SYSTEMS . . .** *showing 5 of the 324 Clarage Fans delivering conditioned air to manufacturing areas.*

*** Upjohn**

installs

CLARAGE HEAVY-DUTY FAN EQUIPMENT

Fine Pharmaceuticals! ...the making of over 700 different kinds has started in this great plant of the Upjohn Company, 10 minutes south of Kalamazoo.

Here much of the manufacturing... ***to maintain integrity of product*** ...is dependent upon air conditioning. 120 complete systems handling 2,800,000 c.f.m. are installed.

" " " " " "

A multimillion dollar project... Engineers and Builders, The Austin Company, Cleveland.

" " " " " "

Upjohn has had more than a quarter-century of experience with Clarage Equipment. It well may be that this was the deciding factor in selecting Clarage ***HEAVY-DUTY*** Fans for ***every one*** of the air conditioning systems operating in this new Upjohn plant.

CLARAGE

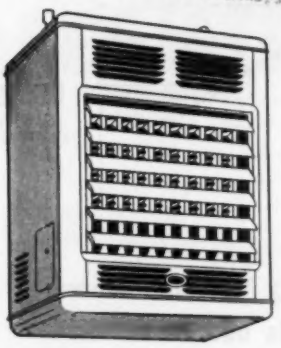
—*HEADQUARTERS* for Air Handling and Conditioning Equipment

CLARAGE FAN COMPANY

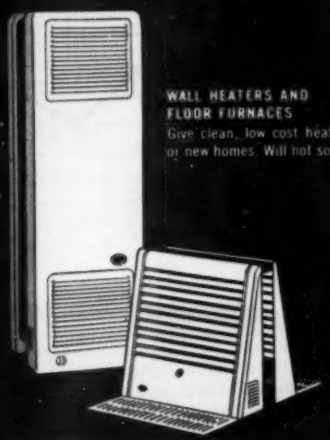
KALAMAZOO, MICHIGAN

APPLICATION ENGINEERING OFFICES . . . . IN ALL PRINCIPAL CITIES

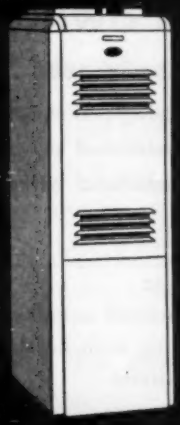
UTILITY



UNIT HEATERS
Furnish efficient "spot heating" in stores, plants, schools, churches and recreation centers.



WALL HEATERS AND FLOOR FURNACES
Give clean, low cost heat in old or new homes. Will not soil walls.



FORCED AIR FURNACES
Provide the finest in automatic, quiet, warm-air-heat for larger homes, etc.

Utility builds more sales for you

HERE'S WHY: The wide range and variety of Utility Gas Heating Equipment gives more models to choose from—one to fit every problem and every purse. Soundly engineered and sturdily constructed, Utility equipment gives years of satisfactory customer operation. This builds business for you year after year. Feature the *complete* Utility line for more profits. Write *now* for information about Utility dealerships. For year-'round business, sell Utility Cooling, too!

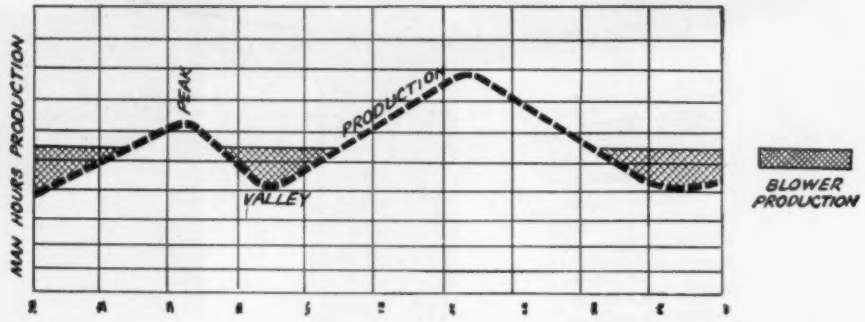
UTILITY
TRADE MARK
Guaranteed Heating Performance

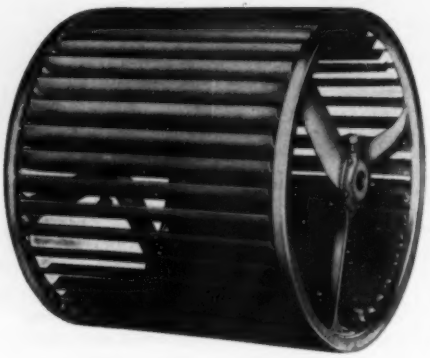
UTILITY APPLIANCE CORP. 4851 So. Alameda St., Los Angeles 58, Calif.

The Nation's Foremost Manufacturer of Evaporative Air Coolers... Utility Gas Heating Equipment... Gaffers & Sattler and Occidental Automatic Gas Ranges

Take up "Lag" Time

KEEP YOUR PLANT OPERATING AT MAXIMUM CAPACITY • ABSORB YOUR OVERHEAD





Buying Morrison Blower Wheels and Parts, Help You Reduce Your Inventory Dollar and Capital Investment.

WHEN YOU BUILD YOUR OWN BLOWERS

You usually need . . .

no additional equipment
no additional key personnel
no additional workers

Building Your Own Blowers

. . . helps eliminate valleys in production
helps spread overhead of key personnel over larger base
helps keep plant equipment operating with no shutdowns
helps give worker more working hours

Write today for NEW Morrison Catalog giving complete story

MORRISON PRODUCTS, INC.

16816 WATERLOO ROAD CLEVELAND 10, OHIO

FIFTY MILLION "SALESMEN"

Lesson in Economy
In Automatic Heating
Simplicity = Dependability
Solution:
TORIDHEET
Rotary Wall Flame Oil Burner
The TORIDHEET Rotary Wall Flame oil burner is your best bet for year in, year out satisfaction, because it's tops in simplicity —with just one moving part. No separate motor, pump, delicate valves or nozzles to replace or adjust.
Get dependable TORIDHEET operation now and fuel savings of 25% or more.
Phone your TORIDHEET dealer listed under "Oil Burners" in the yellow pages or mail coupon today.
TORIDHEET Rotary Wall Flame equipment is equally suitable for new installations or conversion of your old heating plant. Burns new type catalytic oil with top efficiency.
CLEVELAND Toridheet
I would like:
Free Literature
Free Heating Survey
Name
Address
Phone
American Home
Farm Journal
Better Homes and Gardens
Popular Mechanics Magazine

● Leading National Magazines Carry TORIDHEET Sales Messages to Your Customers.

● A Few of the Country's Leading Papers that Help Pre-sell Your Customers on TORIDHEET.

...FOR TORIDHEET DEALERS!

This fall TORIDHEET dealers will be supported by more than fifty million sales messages in leading national magazines and newspapers all over the country.

It pays you to tie into this great TORIDHEET promotion with window displays, decals, neon signs and direct mail folders. Hitch on the the bandwagon that's really going places!

The pioneer rotary wall flame oil burner

Toridheet units for every need . . every budget . . Rotary Wall Flame Burners . . Gun Burners . . Rotary Fired Boilers and Furnaces . . Gun Fired Boilers and Furnaces . . Gas Conversion Burners and Gas Fired Furnaces

CLEVELAND Toridheet AUTOMATIC HEATING

TORIDHEET DIVISION
CLEVELAND STEEL PRODUCTS CORPORATION
7306 Madison Avenue Cleveland 2, Ohio

Affiliated Canadian Manufacturers: Conroy Mfg. Company, Ltd., Catherine St., St. Catharines, Ont.

CRESCENT TOOLS

are shipped to tool users

ALL OVER THE WORLD

from THIS PLANT----

The Crescent Tool plant at Jamestown, N. Y. is one of the finest tool manufacturing plants in the world. It is completely up-to-date, with the latest modern machinery. That's why the Crescent Line of hand tools can be depended upon to do good work, quicker and easier.

CRESCENT . . . CRESTOLOY

WRENCHES :: PLIERS :: SCREWDRIVERS :: HACKSAWS
TIN SNIPS :: PUNCHES :: CHISELS :: NAIL PULLERS
SCRATCH AWLS :: WIRE GRIPS :: SLEEVE WRENCHES

CRESCENT TOOL COMPANY, JAMESTOWN, N. Y.

"Crescent" is our trade-mark, registered in the United States and abroad, for wrenches and other tools. Sold by leading distributors and retailers everywhere and made only by Crescent Tool Company, Jamestown, N. Y.

"—we depend on the Anemotherm Air Meter for our livelihood!"

E. VERN BURFORD, *Owner*
NORTHWEST AIR BALANCE
has built a successful business in Seattle by keeping heating, ventilating and air conditioning installations functioning properly.

E. "VERN" BURFORD
GArfield 4111

NORTHWEST AIR BALANCE
Specialized Air Balancing • Heat • Ventilation
Residential • Commercial
3321 19th West
SEATTLE 99, WASHINGTON

May 18, 1951

Anemostat Corporation of America
10 East 39 Street
New York 16, New York

Gentlemen:

We operate and maintain a complete Air Balancing Service whose very existence depends on the accurate air testing ability of our instruments. It has been through the proper use of these instruments that our continued support is gained. We are employed by consulting engineers and heating contractors to help them attain the best possible results from the design of ventilation and air conditioning systems.

The heart of air balancing is good instrumentation and we have found the Anemotherm Air Meter to be the one instrument we value most. We find its direct readings can always be relied upon to be accurate, whether taken in the duct, in the neck or outside of an air diffuser or for determining air movements within rooms at velocities as low as 10 to 15 feet per minute. The Anemotherm being a lightweight, portable, self-contained instrument has saved us much time and energy and has proved exactly suited to our needs.

It is no exaggeration to say that we depend on the Anemotherm Air Meter for our livelihood.

Very truly yours,
E Vern Burford
E. Vern Burford, Owner
Northwest Air Balance

EVB:ljb

ANEMOTHERM AIR METER MEASURES

Air Velocity
FROM 10 FPM TO 6,000 FPM

Air Temperature
FROM 30 F TO 155 F

Static Pressure
FROM 0 TO 4 NEG. AND FROM 0 TO 10 POS. IN. WG

Write for Bulletin

ANEMOSTAT®

DRAFTLESS *Aspirating* AIR DIFFUSERS

ANEMOSTAT CORPORATION OF AMERICA
10 EAST 39th STREET, NEW YORK 16, N. Y.
REPRESENTATIVES IN PRINCIPAL CITIES

"No air conditioning system is better than its air distribution"

AC 1275

For the right slant on your reputation...

Hoover®

ELECTRIC MOTORS

When you install, specify or recommend heating, ventilating or air-conditioning equipment, you know your own good name depends on that installation's giving top-notch, reliable performance. That's why so many builders, contractors and engineers pick Hoover Motors to power their installations.

Hoover general-purpose motors are famous for long, quiet, dependable service. They're built like motors costing far more. And, whatever your requirements, there's almost sure to be either a general-purpose or special-purpose Hoover Motor to fit them —as you can see from these specifications:

1. CAPACITOR-START MOTORS for hard-starting, continuous-duty applications such as compressors, machine tools, and pumps. Rigid or resilient mounted, sleeve or ball bearings, ¼ through 1 HP. Rigid-mounted ball bearing only through 3 HP.

2. POLYPHASE MOTORS for use where three-phase supply lines are available. Start without reduced voltage compensator. Low-cost operation. Rigid mount or resilient mount, ball bearings, or sleeve bearings, ¼ through 1 HP. Rigid-mounted ball bearing only through 5 HP

Besides these general-purpose motors, there are other Hoover Motors designed especially for pumps, oil burners, fans and blowers. Write for details.

THE HOOVER COMPANY
Kingston-Conley Division
68 Brock Avenue
North Plainfield, New Jersey

AMERICAN-Standard

First in heating . . . first in plumbing

Your New AMERICAN-Standard Warm Air Heating Catalogue

. . . an indispensable source of product information

This is your new warm air heating catalogue just issued by American-Standard. Your copy should be in your hands now.

COVERS ENTIRE LINE. Here in a single source book is complete information on the entire American-Standard line of warm air heating, including winter air conditioners, warm air furnaces and conversion burners—plus the new Mayfair Summer Air Conditioner and the electronic Magne-filter Air Cleaner.

CONTAINS ALL WANTED DATA. You'll find that this information-packed catalogue contains specifications, ratings and installation and application data—all arranged to help you quickly and accurately determine just which is the right size and capacity of a selected product for any installation.

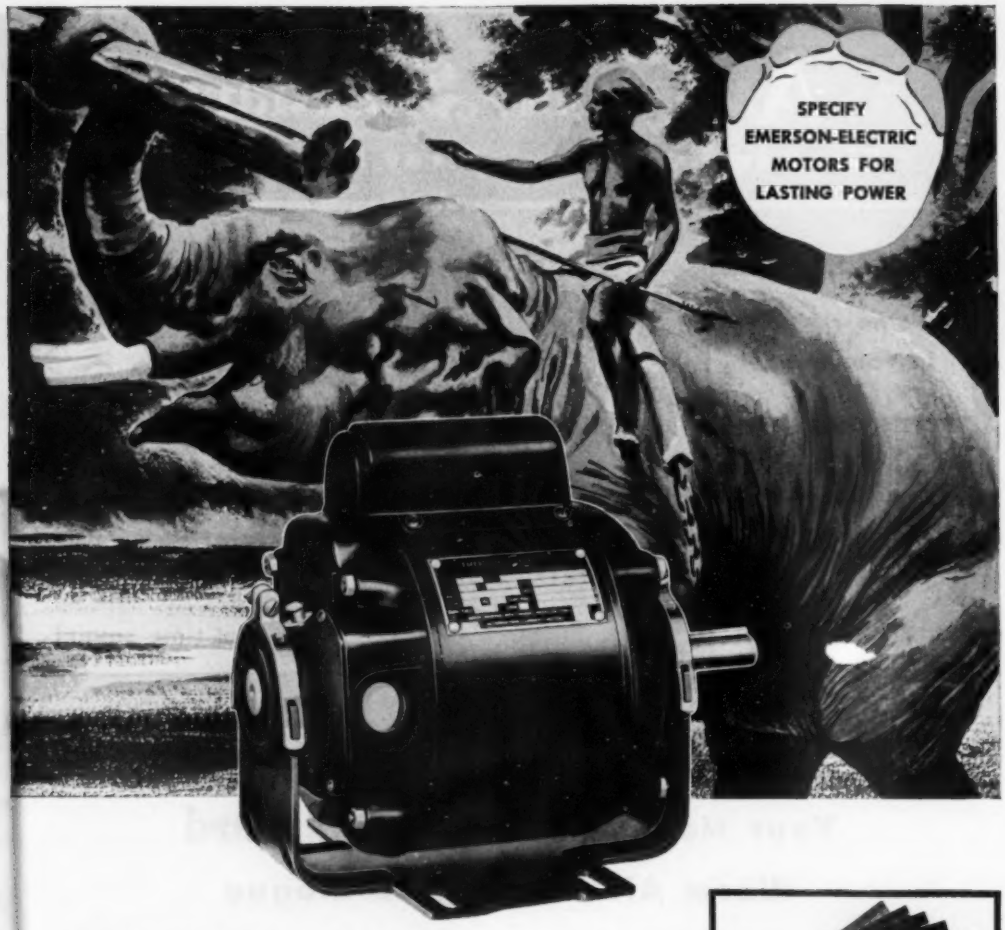
SAVES YOU LOTS OF TIME. It takes only six seconds to locate complete information on any American-Standard product. With this new catalogue in your store, you can find the right warm air heating equipment for virtually any job. And your customers know they're nationally-advertised products.

KEEP IT HANDY . . . USE IT OFTEN. Keep this new catalogue within easy reach on your desk. You will have many occasions to refer to it in the months and years ahead. Customer preference for American-Standard warm air heating products is growing greater all the time!

American Radiator & Standard Sanitary Corporation · P. O. Box 1226, Pittsburgh, Pa.

Serving home and industry

AMERICAN STANDARD · AMERICAN BLOWER · CHURCH SEATS · DETROIT LUBRICATOR · KEWANEE BOILERS · ROSS HEATER · TONAWANDA IRON



Built to Last

"How Long Will It Last?" This question can be one of the most important points by which your product is judged. Further, the motor which you choose may be the determining factor.

Emerson-Electric Motors are *built* to last. Sound engineering and design principles, plus rugged construction have helped to build a reputation for long life into numerous nationally known products. These characteristics have also made them the standard for quiet, efficient, uniform power.

The wide acceptance of Emerson-Electric Motors by domestic, institutional and industrial consumers is based on a background of 60 years' experience. It's sales assurance to select motors with *lasting power.* Your inquiry is invited on this complete line of motors in the 1/20 to 5 h.p. range.

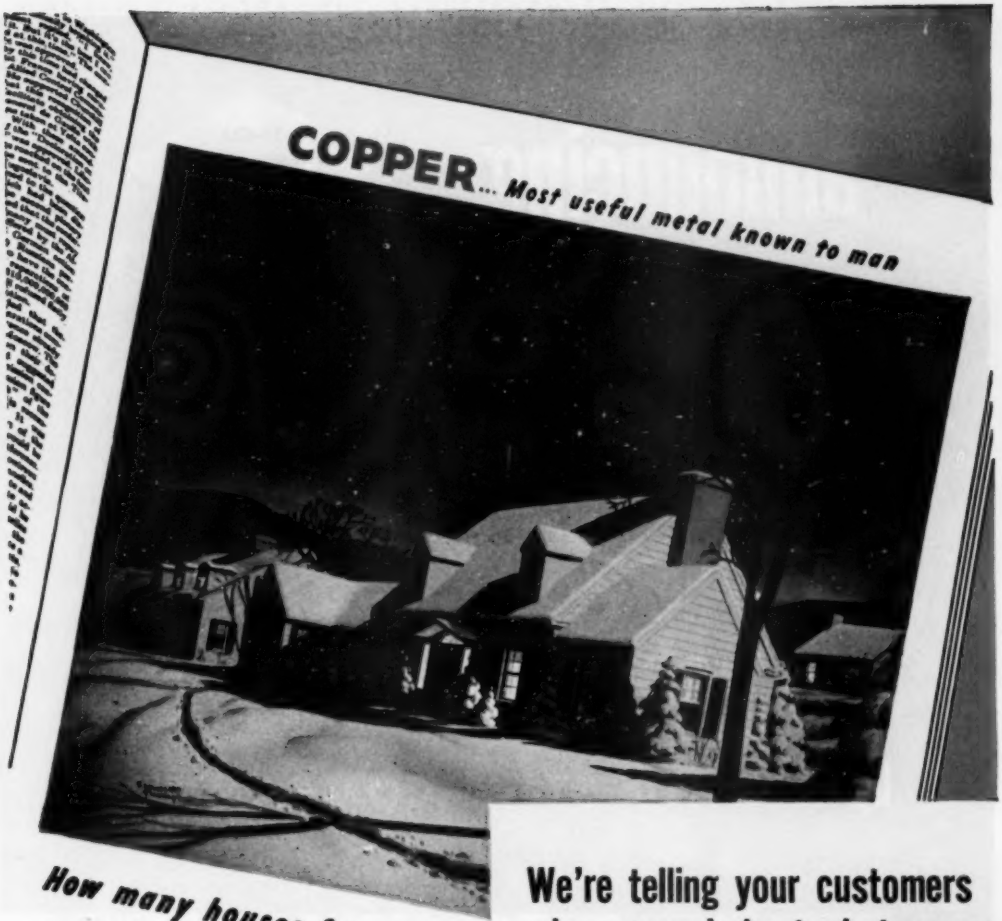
Write for these Emerson-Electric Motor Data Bulletins

Appliance and equipment manufacturers, with applications for motors of 1/20 to 5 h.p., can profitably use these reference guides. Specifications, construction and performance data are included for these motors:

- ☐ 143-A Capacitor-Start
- ☐ 143-B Split-Phase
- ☐ 143-C Integral
- ☐ 143-D Fan-Duty
- ☐ 143-E Oil-Burner
- ☐ 143-F Jet Pump
- ☐ 143-G Blower

The Emerson Electric Mfg. Co.
St. Louis 21, Mo.

EMERSON ELECTRIC
MOTORS • FANS APPLIANCES



How many houses for a battle

It takes all the copper, brass and bronze in 3200 homes to build a battleship . . . in 1775 vacuum cleapers for a B-29. It takes 50 radios for a torpedo; 47 refrigerators to build a tank!

This is the challenge that copper faces in answering the call to arm. The very qualities that make copper so important in time of peace make it indispensable in time of war. There are no real substitutes for man's most useful metal. No other metal can match the combination of properties that copper and alloys provide—their strength and ready workability, high resistance to corrosion, complete immunity to rust, unusual ability to conduct heat and electricity.

Because there's not enough copper to serve our military needs and all of our civilian wants as well, it has been necessary to restrict non-

First in Copper, Brass and Bronze

We're telling your customers why copper is best—but scarce

This full-page, full-color Anaconda advertisement, one of a series appearing every month in *The Saturday Evening Post*, is doing a double job that will pay off for you. It explains why copper is scarce for homes because more and more of it is needed to help arm America. And it reminds your customers of the matchless job that copper does in homes—looking to the day when more of it will be available for civilian uses.

If you would like copies of this or other advertisements in *The Post* series for your own use, just write to: The American Brass Company, Waterbury 20, Connecticut. In Canada: Anaconda American Brass Ltd., New Toronto, Ontario.

51-97A

Nothing serves like ANACONDA® COPPER

announcing...

TI-CO is superior in tightness of coating

TI-CO is superior in forming qualities

TI-CO is superior in appearance

INLAND TI-CO ®

a new galvanized sheet steel by INLAND STEEL COMPANY

TI-CO is a continuously annealed and galvanized sheet steel manufactured by Inland under the patented Sendzimir process.

In TI-CO galvanized sheets, the brittle iron-zinc layer found in ordinary galvanized sheets is virtually eliminated. This means the zinc coating adheres so tightly to the steel that TI-CO sheets can be severely formed without the flaking or peeling of the coating. Stamping, cold-drawing, double-seaming and brake or roll-forming will not impair the protective qualities of TI-CO.

This special process of manufacture gives TI-CO a bright, uniform finish that sets it apart from ordinary galvanized sheets.

Unfortunately, the present restrictions and shortage of zinc mean that today's production of Inland TI-CO must be limited to use by our regular galvanized sheet customers and other galvanized sheet users having Government rated orders. However, toward the day when it will be in abundance for all, we present these facts. So keep TI-CO in mind for use in the future—for applications where the corrosion-resistant qualities of a zinc-coating can be effectively combined with the excellent forming qualities of TI-CO.

INLAND STEEL COMPANY · 38 S. Dearborn Street, Chicago 3, Illinois

Sales Offices: Chicago • Davenport • Detroit • Indianapolis • Kansas City • Milwaukee • New York • St. Paul • St. Louis.

Principal Products: Sheets, Strip, Tin Mill Products, Bar Mill Products, Plates, Structural Shapes, Floor Plate, Piling, Reinforcing Bars, Rails and Track Accessories, Pig Iron, Coal Chemicals.

INLAND

• ANOTHER REASON WHY SUNDSTRAND IS *FIRST* IN FUEL UNITS •

Positive seating strainer easily removed for cleaning

Just loosen a few screws, lift off the cover, and the Sundstrand strainer slides out *horizontally*, bringing all dirt and gum with it. You don't have to "fish" down an opening to dig out foreign materials. After you rinse away the gums or solids adhering to the screen in a solvent solution, note the sturdy, plated frame, the monel metal screen (acid-resistant, impervious to chemical reactions). Such simplified servicing is a characteristic of the two basic Sundstrand Units; (single- or two-stage, with or without solenoid), which have capacities and mounting arrangements for all new equipment or replacement installations.

SPRING-ACTION, POSITIVE SEATING OF STRAINER AGAINST GASKET

Strainer seats positively against the inside gasket, and is secured in place by the strong spring action of the end bail.

SUNDSTRAND

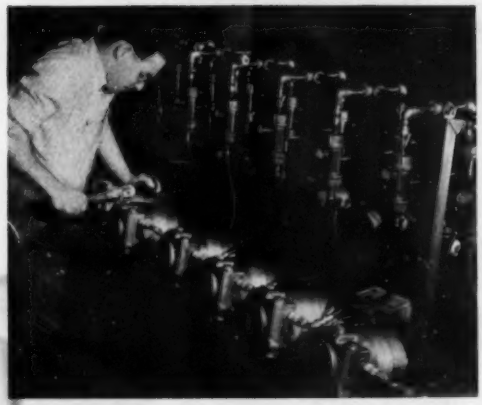
SUNDSTRAND FUEL UNITS

SUNDSTRAND MACHINE TOOL CO.
HYDRAULIC DIVISION, ROCKFORD, ILL.

Made in Canada by John Inglis, Ltd., 14 Strachen Ave., Toronto

For customer satisfaction, sell Delco-Heat

Delco-Heat's rigid testing and inspection guarantee products of highest quality and dependability.



Setting a number of *Rotopower* Units up for an actual 8 hour run-in test. Here, the oil pump operation must meet its most rigid test. All moving parts of the Delco-Heat "Rotopower" Burner are located in this compact *Rotopower* Unit.

Adjusting pressure regulating valve of *Rotopower* Unit to assure proper pressure of oil at nozzle, and checking operation of motors under low-voltage conditions. A component part of every *Rotopower* Unit is the exclusive Delco Appliance Rigidframe Motor.

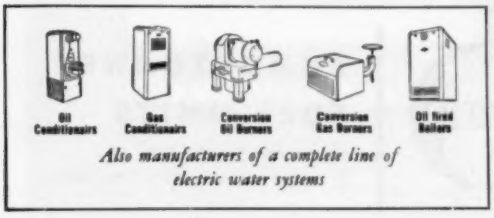
Today, more than ever, the home owner demands the finest in automatic heat. Nothing less than a unit that gives completely economical and trouble-free service will satisfy him.

When you sell Delco-Heat, you can be sure you're giving your customer the best. A big reason for this is that the high production standards maintained by Delco insure the finest quality products available anywhere. At the lowest possible prices, too—because Delco's constant checking and testing have maintained quality without sacrificing the economy of mass production techniques.

Of course, there are other reasons why you'll find Delco an outstanding company to work with. For example, Delco Appliance manufactures all of the parts that go into the Rotopower Oil Burner—which means a better integrated unit, with each individual part designed for its specific function.

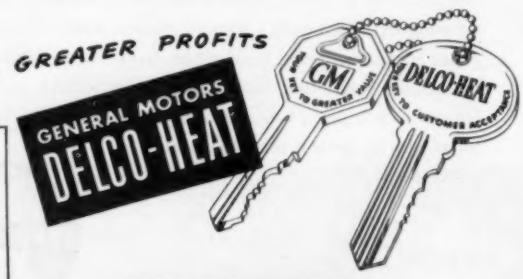
It's important, also, to remember that as a Delco-Heat Retail Distributor, you'll be a part of the great "General Motors family." It's assurance that you will always be backed by the best engineering, the newest improvements, the most aggressive types of sales assistance, and the fairest of business policies.

All of these factors put Delco-Heat Retail Distributors at the top of their field, with the most profitable line in the home heating business. If you would like more information about a Delco-Heat franchise, write to Dept. AA-27, Delco Appliance Division, General Motors Corp., Rochester 1, N. Y.



Also manufacturers of a complete line of electric water systems

YOUR KEYS TO GREATER PROFITS



DELCO APPLIANCE DIVISION
General Motors Corporation • Rochester 1, New York

ONLY WHEELING CAN MAKE

COP-R-LOY

REG. U. S. PAT. OFF.

THE COPPER ALLOYED STEEL

COPPER ALLOYED STEEL SHEETS

In shop after shop—on job after job—wise users of galvanized sheets choose Wheeling Cop-R-Loy. Why? Because Cop-R-Loy is *doubly* protected against corrosion!

First line of defense: Wheeling's galvanizing.

Second line of defense: Wheeling's Cop-R-Loy formula in the base metal.

Together, these Wheeling features assure more life for the handiwork of your craftsmen—more satisfaction for your customers—more contracts for you. For all your fine work, specify Wheeling Cop-R-Loy Sheets.

Wheeling

WHEELING CORRUGATING COMPANY

WHEELING, WEST VIRGINIA

ATLANTA BOSTON BUFFALO CHICAGO COLUMBUS DETROIT LOUISVILLE
KANSAS CITY MINNEAPOLIS NEW ORLEANS NEW YORK PHILADELPHIA RICHMOND ST. LOUIS

Century MOTORS

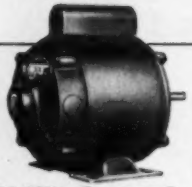
Choose From These Many Types to Fit Your Job

HEAVY-DUTY for Industrial and Appliance Use

From Century's wide range of types and sizes, there's a proper motor for all popular applications. You can be confident that the right Century motor will assure a long life of satisfactory performance.

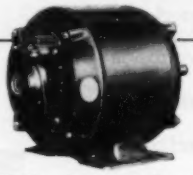
Shown here are examples of Century's line of **FRACTIONAL HORSEPOWER** motors—ruggedly built for smooth, quiet operation, with a remarkable freedom from vibration

Century Electric Company is celebrating its 50th year in the electrical industry.

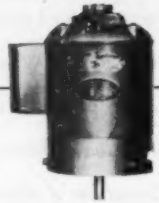


TYPE CSH — Capacitor Start Induction Single Phase Motor suitable where high starting torque and normal starting current is satisfactory.

TYPE SP — Split Phase Induction, Rigid Base, Single Phase Motors suitable for light starting duty.



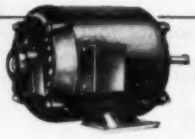
TYPE SC — Squirrel Cage Polyphase Motor built in fractional sizes for all torque requirements.



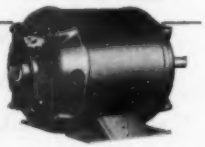
JET PUMP MOTOR—Capacitor Start Single Phase Motor available in sizes for practically every jet pump application.

TYPE SP — Split Phase Induction, Cushion Base, for quiet operation.

OIL BURNER MOTOR especially designed for this service. Compact, rugged; smooth, quiet starting and running.

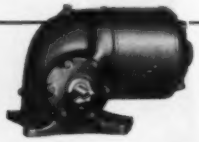


TYPE RS — Repulsion Start Induction Single Phase Brush Lifting Motor suitable for applications requiring high starting torque and low starting current.



TYPE DM — Direct Current built in sizes and ratings for applications where direct current is available or its use desirable.

UNIT HEATER MOTOR provides smooth, quiet performance throughout a long service life.



GEAR MOTOR, compact, rugged, ball bearing equipped, for your high torque, slow speed requirements.

The complete line of Century motors includes a wide range of types and kinds, from 1/8 to 400 horsepower. They are available in open rated, splash proof, totally enclosed fan cooled and explosion proof frames.

Specify Century motors for all your electric power requirements.

CENTURY ELECTRIC CO.

1806 Pine Street
St. Louis 3, Missouri

-482

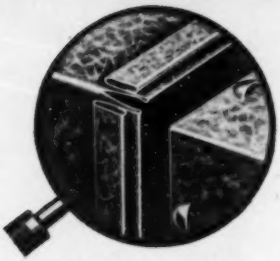
OFFICES AND STOCK POINTS IN PRINCIPAL CITIES

Here's Why

You Make More Profits on ADELTA Warm Air Duct Systems

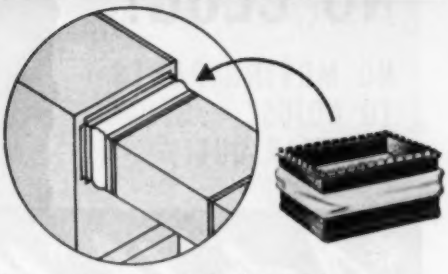
These are a few of the exclusive units offered by ADELTA to make the installer's job easier and more profitable. Completely new in design, they introduce new methods of installation that save you hours on every job. They are made *only* by ADELTA, and cost no more than old-type ducts and fittings.

For information on the complete ADELTA line, write for our 1951 catalog.



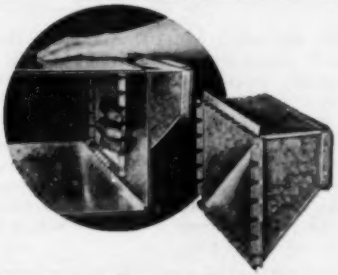
ONE-PIECE SNAP-LOCK CLEAT

...is an exclusive feature on all ADELTA units, including take-offs and reducers. You just push two sections together, and presto!—you have a rigid, leakproof joint...without any drilling, notching or crimping to slow up the job. Cleat can't get lost in shipment or on the job because it's formed from the same sheet as the fitting.



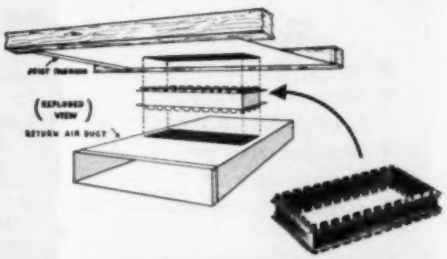
#25 FLAME-PROOF CONNECTOR

...a new standard unit for connecting furnace plenum to warm air trunk. Center section is made of flame-proof fabric, which absorbs fan vibration, and also speeds installation by allowing "play" at the point of connection. The #25 replaces two other fittings—saving up to 50% of their cost. Equipped with new pre-notched collar.



NEW PRE-NOTCHED COLLAR EDGES

...save time on every collar edge connection because they're easily closed by finger pressure. No need for the installer to notch the edges, straighten them with pliers, and hammer them closed. Notches are die-cut in a U-shape, and corners are rounded to prevent finger injury. Provided on all 4 sides of fittings with collars—at no extra cost.



#20 RETURN AIR CONNECTING COLLAR

...saves you time and trouble in connecting joist panning runs to return air duct. No need to use elbows, or to slit and bend panning or duct. Comes in 8 sizes to fit all standard trunk ducts. Equipped with new pre-notched collar.

INDOOR COMFORT

ADELTA MANUFACTURING COMPANY, INC.

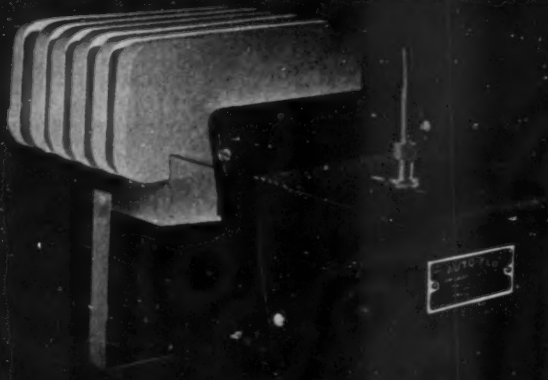
2103 ELLSWORTH STREET • PHILADELPHIA 46, PENNA.

A New Principle of Operation

NO FLOAT!
NO DRIP!
NO CLOG!

NO MOVING PARTS TO ADJUST... STICK OR WEAR OUT!

FOR ... and LESS SERVICING

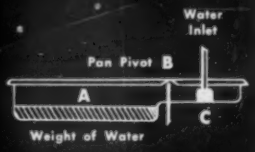


Autoflo "100"

Patent Pending

AUTOMATIC HUMIDIFIER

"Simple as ABC"



Features

- Easier Installation
- More Efficiency
- Less Maintenance
- Modern Design
- Longer Life
- Greater Satisfaction

UNCONDITIONAL FACTORY GUARANTEE ON ALL PARTS FOR ONE YEAR!

Order through your Local Jobber or Write, Wire or Call Us for further information —

*TRADE MARK

NOTES FROM AN ARCHITECT'S SKETCH PAD

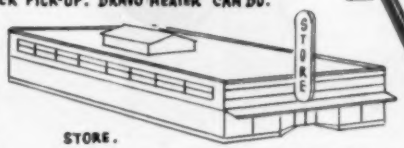
LOOKS LIKE THAT VERSATILE DRAVO "COUNTERFLO" HEATER CAN BE USED ON PRACTICALLY ALL OUR JOBS.

SCHOOL DISTRICT BUDGET LIMITED. CAN SAVE WITH DRAVO HEATERS.

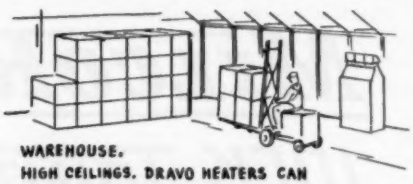
CHURCH. INTERMITTENT HEATING. NEEDS QUICK PICK-UP. DRAVO HEATER CAN DO.

INDUSTRIAL PLANT. DRAVO HEATERS HAVE 150' AIR THROW. NO DUCTS NEEDED.

ARMY BASE.
WINTER CONSTRUCTION ON THESE BARRACKS. CAN INSTALL DRAVO HEATERS EARLY FOR HEAT DURING CONSTRUCTION AND AFTER COMPLETION.

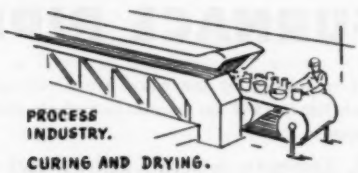


STORE.
WITH DRAVO HEATERS, CAN USE ONE SET OF DUCTS FOR HEATING AND AIR-CONDITIONING.

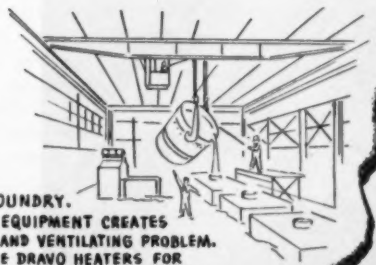


WAREHOUSE.
HIGH CEILINGS. DRAVO HEATERS CAN REDUCE ROOF HEAT LOSS, KEEP HEAT WHERE IT'S NEEDED.

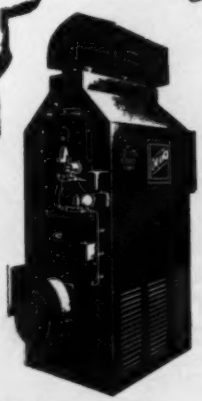
DIESEL RAILROAD SHOP. NEEDS HEAT AT WORKING LEVEL. DRAVO HEATERS IDEAL.



PROCESS INDUSTRY.
CURING AND DRYING. SPECIFY DRAVO HERE.



FOUNDRY.
EXHAUST EQUIPMENT CREATES HEATING AND VENTILATING PROBLEM. USE DRAVO HEATERS FOR TEMPERED "MAKE-UP" AIR.



...kin
...w Dravo.

A case study on any ... installations is yours for the asking. For complete information on how Dravo "Counterflo" Heaters can help solve your heating problems, write for Bulletin LM- 26-354

DRAVO CORPORATION

HEATING DEPARTMENT, DRAVO BUILDING, PITTSBURGH 22, PA.

PITTSBURGH • CLEVELAND • PHILADELPHIA • DETROIT • NEW YORK • CHICAGO • ATLANTA • BOSTON

Sales Representatives in Principal Cities. Mfd. and Sold in Canada by Marine Industries, Ltd., Sorel, Quebec
Export Associates: Lynch, Wilde & Co., Washington 9, D. C.

"Man, it's Easy"

with

MILCOR* LOCK JOINT FURNACE PIPE

Most efficient automatic lock available
— no pounding. Just press together by hand.
Fade-away crimp simplifies installation
— fast, neat installations every time

All my jobs go up faster and better with new Lock-Joint — and no wonder — look at these features:

- **Continuous lock over entire length — perfect fit end to end.**
- **Easy to assemble by hand — no tools necessary.**
- **Deep fade-away crimp simplifies fast neat installations.**

Use Lock-Joint to save time and cut costs on all your jobs. Be sure to give your jobber as much time as possible to fill your needs.

INLAND STEEL PRODUCTS COMPANY

M-85

Formerly Milcor Steel Company

4023 WEST BURNHAM STREET • MILWAUKEE 1, WISCONSIN

BALTIMORE 24, MD. — 5300 Pulaski Highway • BUFFALO 11, N. Y. — 64 Rapin St. • CHICAGO 9, ILL. — 4301 S. Western Ave. Blvd. • CINCINNATI 25, OHIO — 3240 Spring Grove Ave.
CLEVELAND 14, OHIO — 1541 E. 38th St. • DETROIT 2, MICH. — 690 Amsterdam Ave. • KANSAS CITY 8, MO. — S. W. Boulevard and State Line
LOS ANGELES 58, CALIF. — 4807 E. 49th St. • NEW YORK 22, N. Y. — 220 Park Ave. • ST. LOUIS 10, MO. — 4215 Clayton Ave.

News Round-Up

March Furnace Shipments

THE MONTH OF MARCH saw no break in the high level of shipments of warm air furnaces. According to the Bureau of the Census, Department of Commerce, there were 79,239 warm air furnaces shipped in March compared to 59,982 units in March 1950. This brought total shipments for the first quarter of 1951 to 222,348 against 145,487 in the first quarter of 1950. March shipments also showed an increase over Feburary 1951 when the total was 71,966.

An analysis of March shipments by types of fuel shows the following percentages: coal fired units, 13,475 or 17 per cent; oil fired units, 24,584 or 31 per cent; gas fired units, 41,180 or 52 per cent.

Gas and oil fired automatic heating equipment totaled 83 per cent for the month. Forced air furnaces made up 74 per cent of shipments during the month.

Oil burner shipments were up slightly in March over the same month in 1950, 56,042 to 51,985. Residential oil burners totaled 52,226 and commercial and industrial types 3,816 during the month.

Figures for gas fired warm air furnace shipments released from a telegraphic report by the Gas Appliance Manufacturers Association indicate 22,700 forced air and gravity units shipped in May compared with 25,600 in April. Figures for the first five months of 1951 total 161,900 units against 170,100 last year.

GAMA figures for gas conversion burners increased to 10,800 units in May 1951 after a drop to 9,700 in April. A drop in 1951 burner shipments from 55,200 in the first five months to 138,200 last year reflected the influence of gas restrictions effective in many areas.

May Housing Starts Up 10 Per Cent

NEW HOUSING STARTED in May 1951 advanced 10 per cent when home builders began 97,000 nonfarm dwelling units. The rise after a drop to 88,000 in April was due to a spurt in apartment construction and a seasonal advance in single family home building. May 1950 established a record in residential construction when 149,100 units were started. The Bureau of Labor Statistics attributed the drop from last year to the influence of Regulation X, companion curbs, and a scarcity of mortgage money.

A 1951 volume of 444,500 new units for the first five months was second only to the 561,400 starts in the same period last year.

Aluminum Production Steady

"PRODUCTION OF primary aluminum in April held to an average of 4,500,000 pounds per day, the same as in March," Donald M. White, secretary of the Aluminum Association, announced. "This represents a slight increase, about one per cent, over the average daily production in the first quarter of 1951," he added.

During the 30 days of April, production of primary aluminum reached 135,402,337 pounds, as compared with 140,044,429 pounds for the 31 days in March.

Aluminum sheet and plate shipments by association member companies declined in April, 93,963,648 pounds compared with 99,965,985 pounds for the previous month. Foil shipments by member companies also dropped, from 9,811,894 pounds in March to 9,262,781 pounds for the month of April.

April Steel Production

DURING THE MONTH of April steel production was 8,840,521 net tons or 103.1 per cent of capacity for the month. This brought production for the year to 34,520,444 tons.

Annual steel capacity has been expanded to 104,229,650 tons.

1952 Warm Air Heating Short Courses

FIVE UNIVERSITY and college warm air heating short courses have been scheduled for the 1952 season. This announcement has been made by the warm air heating short course sub-committee of the National Warm Air Heating and Air Conditioning Association's Installation Codes and Technical Education Committee.

Meeting in Chicago on Thursday, June 13th, this subcommittee under the direction of Bruce F. McLouth, The Sales Engineers, Minneapolis, Minn., set dates for the short courses and outlined the instructional material to be presented at the schools.

The five universities and colleges cooperating with the national association in presenting these short courses to members of the industry are: Iowa State College, Ames, Iowa; Michigan State College, East Lansing, Mich.; Purdue University, W. Lafayette, Ind.; Oklahoma A & M College, Stillwater, Okla.; and University of Wisconsin, Madison, Wis.

Oklahoma A & M will lead off the short course schedule with the first four-day school starting on March 17,

News Round-Up

Members of the national association's installation codes and technical education sub-committee for university and college warm air heating short courses met to discuss 1952 schedule of classes. Clockwise around the table are: Geo. Boeddener, National Warm Air Heating and Air Conditioning Ass'n.; R. C. Tegtmeyer, University of Wisconsin; A. G. Earnshaw, Earnshaw Sheet Metal Supply Co.; B. Speaker, F. W. Speaker & Sons, Inc., Prof. R. R. Irwin, Oklahoma A & M; N. T. Hesr, Vorys Bros., Inc.; B. F. McLouth, The Sales Engineers and chairman of the sub-committee; Dean Lorin G. Miller, Michigan State College and chairman of the Installation Codes and Technical Education Committee; Prof. R. J. Waalkes, Michigan State College; G. A. Voorhees and J. M. Martin, National Warm Air Heating and Air Conditioning Ass'n.; Prof. M. Gould, Iowa State College; D. E. Sedgwick and I. W. Metcalf of Waterman-Waterbury Co.

1952. Professor Robert R. Irwin, of the school of mechanical engineering, is in charge of this class. Next on the schedule is Iowa State, with its course extending from March 25th through March 28th. Professor Marvin Gould, engineering extension service, is making the necessary arrangements. Michigan State College Short Course, under the supervision of Dean Lorin G. Miller, will be held on March 31st through April 3rd. Following Michigan will be the course at Purdue University from April 9th through April 12th. Ben Speaker, of F. W. Speaker & Sons, Inc., West Lafayette, Ind., will coordinate arrangements with Merle M. McClure of Purdue. The final class of the year will be conducted at the University of Wisconsin on April 15th through April 18th. R. C. Tegtmeyer, director of the mechanical engineering institute, is making the arrangements for the Wisconsin school.

Each of the four-day schools will consist of four main design problems from which the heating men attending can choose the course of most interest to them. One of the four design problems presented at each of the short courses will deal with perimeter warm air heating in basementless homes built on a concrete slab and in houses built over crawl spaces. Another problem will be design of a gravity warm air heating system for a typical one-and-a-half story home with an expandable attic. In addition to this design problem will be a discussion on the conversion of the gravity unit to a winter air conditioning system by the addition of a packaged blower unit. The third course to be presented will be the design of either a large ranch type house using zone control or a four-room school. The fourth course has been left open so that each university and college may present a subject of particular interest to heating men whose market area is in the vicinity of the school.

Interspersed between these main study courses will be lectures on common heating problems by prominent heating men. Complete programs for each school and the names of the instructors and lecturers will be announced as soon as all arrangements have been completed.

NPA Actions

The National Production Authority, U. S. Department of Commerce, has instructed its field offices, which process some applications for authority to commence construction, to approve applications if the quantity of critical materials to be used is insignificant and if the defense effort will not otherwise be adversely affected.

NPA's Construction Controls Division has notified all field offices that these new instructions for processing applications should be added to those issued for that purpose last month.

The supplement to the M-4 operating instructions to be added to Part C-4a (4) follows:

"In considering a List B (construction requiring NPA authorization) item of construction under Section 6 (c), an authorization to commence construction can be granted if, in the construction of the project, the quantity of critical materials is so insignificant that the use of such materials in such construction will not adversely affect the defense effort. For example, the use of any type of steel in any project on List B of a quantity less than *three tons* should be considered an insignificant

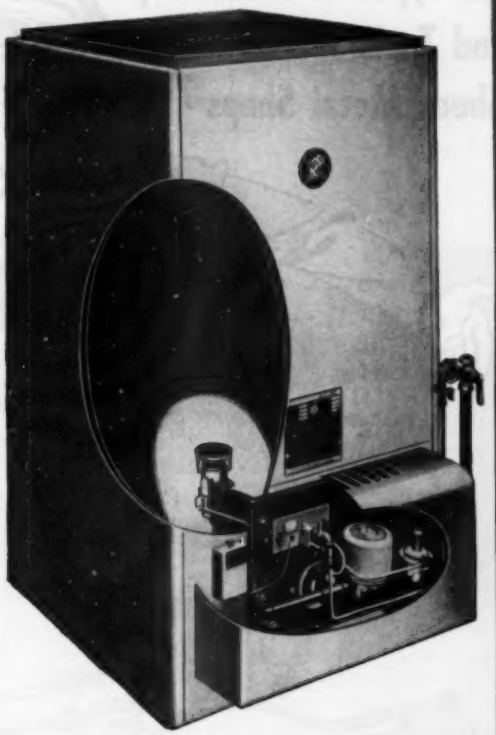
(*Please turn to page* 75)

count on the

RICHMOND

gas-fired, steel gravity furnace

SG-10...70,000
SG-15...90,000
BTU Input per Hour



for low-cost homes and housing developments

Here's a soundly designed, well-built gas-fired gravity furnace . . . finished in light green hammertone enamel, the Richmond SG is an attractive and efficient heating unit.

While low in cost, it gives the same top performance you expect from any unit bearing the Richmond label.

NOTE THESE SPECIAL RICHMOND FEATURES:

12- or 16-gauge steel heat exchanger, welded construction for maximum durability.

Remote pilot igniter, for convenience and safety when lighting burner from outside of furnace.

Mounting plate secured by 4 nuts, for quick removal of burner in servicing.

Control hood, enclosing controls, optional equipment.

Fully approved by AGA.

When quality and economy count . . . count on Richmond.

RICHMOND PLUMBING & HEATING

RICHMOND

RICHMOND RADIATOR CO.—AFFILIATE OF REYNOLDS METALS CO.

Richmond Radiator Company AA-7
19 East 47th Street, New York 17, New York
Please send me full information on Richmond gas-fired gravity furnaces.

Name.....

Company.....

Address.....

All Types of Machinery and Tools for Sheet Metal Shops

Machinery & Tools Illustrated Below
Part of Our Complete Line for Sheet Metal Shops

1—Lock Formers
2—Hand Brakes
3—Press Brakes (small)
4—Combination Machines
5—Portable Electric Drills
6—Roll Forming Machines
7—Hand Operated Punches
8—More Hand Punches
9—Press Brakes (large)
10—Portable Electric Tools

• • • All from One Dependable Source

A single, convenient source for all sheet metal machinery and tool requirements—your nearby Ryerson Plant. Our entire line of sheet metal shop equipment has been carefully selected on the basis of superior performance and dependability. Each machine and tool carries the Ryerson guarantee of complete satisfaction.

You can offset the effects of manpower shortages by equipping your shop now to handle work more efficiently with modern, time-saving tools—replacing hand operations with motor driven machines. Our engineers can often recommend machines that will effect tremendous savings in labor—speed up work and help your shop meet competition by cutting production costs.

Most Ryerson sheet metal machinery and tools are on hand for quick shipment. For complete specifications, prices and delivery, contact our nearest plant.

RYERSON STEEL

JOSEPH T. RYERSON & SON, INC.—STEEL SERVICE PLANTS AT: NEW YORK • BOSTON • PHILADELPHIA • CINCINNATI • CLEVELAND
DETROIT • PITTSBURGH • BUFFALO • CHICAGO • MILWAUKEE • ST. LOUIS • LOS ANGELES • SAN FRANCISCO

AMERICAN ARTISAN

Scrap for Steel for Defense

LAST MONTH we published on this page a resolution adopted by the Sheet Metal Contractors' National Association condemning black markets in steel. Each month we publish news, informative items, and articles on steel production and distribution to keep readers informed about the prospects of future supply because steel is serious business. It is the sinew of peace and the sinew of war. Everyone is conscious of the nation's need for steel and the steel industry has made a serious, Herculean effort to meet it.

While steel still looms as the nation's and our own industry's No. 1 problem, steel producers have chalked up impressive production increases that have already eased a critical situation. Many steel products are more plentiful and stocks have become more adequate.

Now the steel industry needs help, it is faced with a problem that requires cooperation by everyone, especially steel users. It needs scrap. All America is being asked to join in a movement to get the scrap back to the mills. Inventories of heavy iron and steel scrap at mills and foundries are dangerously low, hovering between days and only a few weeks compared with a normal, safe working, 60 day supply. It is imperative for business, industry, and agriculture to consider the serious effects of a continued scrap shortage on their own activities.

Under the press of emergency, the steel industry is committed to supplying steel for direct military uses, defense-supporting industries, and also record quantities of consumer items. This can all be done if new steel making capacity is not kept idle by a scrap shortage.

More than 1½ billion tons of steel are now in use in the United States. Normally millions of tons of this steel are discarded each year and find their way back to the mills as scrap. During World War II, between 110-120 million tons of steel were shipped overseas and little which has become scrap has been returned to this country. Moreover, steel production in 1951 has been rolling along at an unprecedented rate of more than 104 tons a year, about 10 million tons above peak World War II production. These factors have combined to temporarily disrupt the cycle in which steel finally returns to the mill as scrap. The cycle must be restored quickly.

The task of rebuilding depleted mill inventories of heavy scrap is a big one, but other drives for industrial scrap both during World War II and again in 1947 were successful.

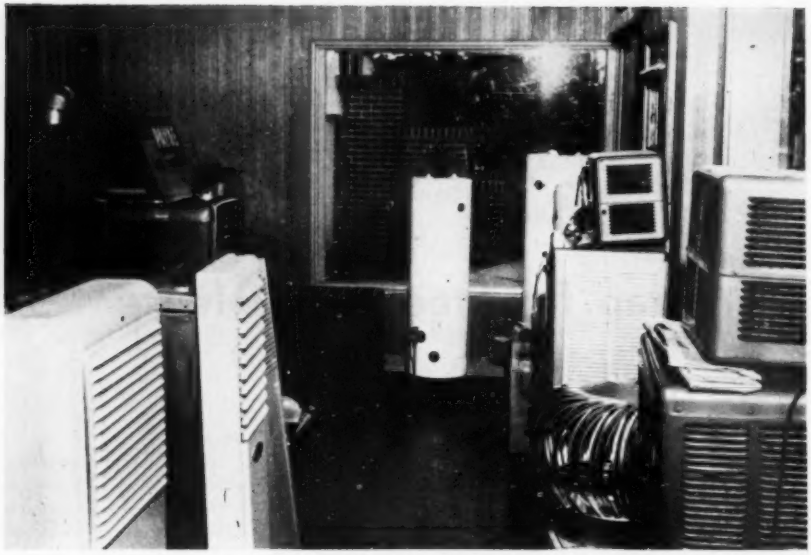
Here is what must be done: Business, industry, agriculture, and other fields can provide the immediate assistance required. Large tonnages of dormant scrap can be found in plants and on industrial, commercial, and civic properties. Dormant heavy scrap is all idle, obsolete machinery and equipment, tools, dies and jigs, damaged or useless road building equipment, condemned bridges, and other steel structures or things made of steel. It can be found almost anywhere.

These things must be declared obsolete by someone in authority, sold as scrap, and started moving back to the mills.

This year steel companies will need about 32½ million tons of purchased scrap, some 3½ million tons more than last year's record tonnage. Next year they will need over 35½ million tons.

These additional tonnages do not have to be manufactured, they need only to be found. When scrap is found, see that it is moved to the nearest dealer who will immediately return it to the mills.

How long the current national scrap emergency will last cannot be predicted. Inventories must not only be increased to maintain current production, but also expanded to a safe working level to avoid a similar situation this winter when seasonal collections fall off.



View of the Modern salesroom.

Merchandising And Promotion Boom Heating And Sheet Metal Business

Here is the story of a contractor who has learned that customers will not beat down your door to attract your attention. He finds that advertising and sales promotion do wonders

ROBERT F. WELCH
San Diego, Calif.

CONTRACTORS in the warm air heating and sheet metal field sometimes get the idea that they don't have to worry about business success as long as they have the necessary skills and a reasonable degree of efficiency. It's the old theory of the world beating a path to your door as long as you can build a better mousetrap. Unfortunately, such a policy holds true in about one case in a hundred.

The Modern Sheet Metal Works of Vallejo, Calif. offers a good example of how smart merchandising can pay off for the progressive business man. N. L. Butler, partner and founder of the firm, takes a great deal of pride in the work done by his nine mechanics. He insists on top quality at all times, but he doesn't let this requirement substitute for selling effort. People in Vallejo are made aware that Modern is ready to serve them.

Surroundings Important

Mr. Butler feels that one of the most important considerations in good promotion is providing pleasant surroundings in which to transact business. "We appeal to the better class of customer, the person who wants good work and is willing to pay for it," he comments. "These people are accustomed to shopping in first class stores. They dislike being

in a grimy and dirty place. That's why we feel that our showroom is such a big asset."

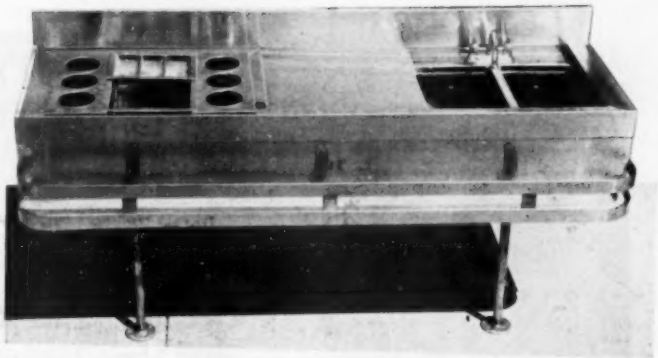
More than 10 per cent of the customers doing business with Modern Sheet Metal Works simply walked in through the front door and made their wants known. As Mr. Butler points out, they wouldn't have taken the initiative if he had been operating in a messy garage on the rear of a lot. They received a favorable initial impression, thereby making his selling job much easier. And they're never ashamed to be seen at the establishment. They're glad to point it out to their friends as a place where they do business.

The showroom measures 30 by 20 ft and has large plate glass windows so equipment can be easily seen from the sidewalk. Walls are finished in striated plywood and the acoustic block ceiling holds noise to a minimum. The front portion of the adjacent 50 ft lot is devoted to parking area.

Sales Area Helps

Originally Mr. Butler had only a small office in the front of the building, since he didn't see the necessity for a sales area. With the growing emphasis on eye appeal in heating equipment, however, he's kept pace with the change by making a space available to show off this equipment in the best way. Heating units are now just as attractive as other appliances and contractors are finding that they should be merchandised in the same way. Homes are being built around heating plants, instead of having the system stuck off any old place in the basement. People have become conscious of what the heating and sheet metal contractor can do for them and they have a right to expect him to operate like a businessman instead of a mechanic in work clothes.

As selling has become more important to a contractor's success, the necessity for advertising has likewise increased. While Mr. Butler does a certain amount of advertising in such conventional mediums as the telephone classified directory and local newspaper, he finds that his best investment is giving away a small temperature and humidity instrument. These units cost him $2.50 each. Although this price may seem relatively high when compared with a calendar or pencil, it is proving well worth the extra money.



This stainless steel sink was designed for a tavern according to the bartender's ideas about how it should be made.

This installation was made in a local church by Modern. It required a complicated control system to assure comfort at all times.

Thermometers are given only to those customers who purchase a major installation, about a $500 minimum. They are attractive enough so they can be placed in any room of the house and the firm's name is inconspicuous on the front. It has been possible to trace a great deal of new business back to these instruments. People see them in a friend's house, find out that Modern has done a good heating or sheet metal job, and come in to inquire about some work they want done.

"The thermometer and humidistat

The window display draws considerable interest from passers-by.

N. L. Butler, founder of Modern Sheet Metal.

is not only a marvelous advertising deal, but it also helps a lot in educating the public," Mr. Butler states.

Humidity

"I have observed that more than half the people with whom I come in contact have the idea that it's necessary to put moisture in the air by having a pan of water in their heating system. This may be true in those sections of the country where zero temperatures are the rule. But it's certainly not the case along the Pacific coast. I point this out to my customers and show them how easy it is to compare temperature and relative humidity with the instrument I give them. This makes a good topic of conversation when friends drop in and I receive more word of mouth advertising."

The Modern Sheet Metal Works counts many of the community's better restaurants and bars among its customers. And here again this contractor enjoys additional business because he makes a conscious effort to obtain it. Once he completes an installation he doesn't simply sit back and wait for the next order to come in. He follows up to find out how well the customer is satisfied, what features he can improve upon and the things he can use for selling points with future prospects.

Not long ago, for instance, he completed a highly successful beer box flanked by a two-station sink. Each sink was five ft in length, a size which couldn't normally be purchased on the open market. They were specifically designed to fit the available space and included several improvements which were the result of previous experience.

Flanking the ice container there are six compartments where whiskey may be kept chilled. Along the front is a speed rack for different mixes and bar whiskey. Cherries, lemons and other fruit are not placed in dishes along the top. Instead there's a convenient sliding tray for this purpose. The design was worked out after talking with bartenders about previous installations. In other words, Mr. Butler went directly to the man who was using his equipment to learn how it could be improved upon.

Heating Plant

Another recent job of which he is proud is the heating plant in the Vallejo First Methodist Church. This job required a complicated set of controls to insure adequate air circulation for large crowds, with a sufficient supply of fresh air which could be cut off during the warming up period. After figuring the Btu requirements and designing this installation, the contractor called in a representative of the manufacturer and the architect for consultation before proceeding with the work. As always, he wanted to make absolutely sure that the customer would be satisfied. If he can't do a job right, he'd rather not do it at all.

An effective sales force can mean the difference between success and failure for a contractor. Many good salesmen need specialized training for selling heating equipment, however. This article offers a good training plan.

Well Trained Salesmen Are Assets

YOU can train your new salesmen to do a better job of selling without expensive sales training set-ups. You can do it in a few after-hours sessions. Here is a plan for doing the job. All it calls for is a little time — yours and that of your employees; plus a very small cash outlay which can be so tiny that it fits into the petty cash classification.

Three Essentials

"There are three things that a new man should learn in order to become a good salesman," one dealer said recently. "He should know all about his products. He should know how to sway people — how to convince the homeowner he should buy. And he should be well-grounded in human relations techniques. In simple terms, this last means no more than that he should be able to get along with people, all kinds of people, good and bad, agreeable and cranky, happy and angry."

The three-day training program takes in these three branches of selling knowledge. It is based upon one hour to two hour sessions held either before the regular opening time or just after closing hours. Some dealers say that after hours is the best time; others like an early start.

Participation

There are many ways of handling a training class. A plan allowing the trainees to participate is best. This keeps their interest hot since they are a part of the course, not merely spectators.

When available, training films and slides do an excellent job of teaching. Often, manufacturers can supply films.

A format for a two-hour training session that has been found effective for heating salesmen goes something like this:

One hour, or three-quarters of an hour, of lecturing. Or — when films can be obtained — a movie of approximately the same length of time.

A middle period devoted to discussion. Here, the

(*Please turn to page* 148)

Plan your work and work your plan.

Brief sales meetings after hours can help solve problems that come up during the day.

Salesmen that are thoroughly familiar with the equipment they sell can do a better job.

Letters That Land New Accounts

DAVID MARKSTEIN
New Orleans, La.

NOT LONG ago, an eastern *Indoor Comfort* dealer sent out an unusual mailing. It was addressed to homeowners who possessed warm air heating systems. The purpose of the mailing was to develop new accounts through a service maintenance offer timed for the beginning of fall when furnaces, ducts, and the rest of the systems needed cleaning, and filters required changing. The mailing was highly unusual. It was planned to tell its story quickly for the reader who had no time to wade through long words. This is the way it went:

Subject: Saving money.

Proposal: We can service your heating system so that your fuel bills will be lower, and your home more comfortable.

Results: Fuel savings that conserve your inflation-attacked dollars. More comfortable living. Longer life for your heating equipment. *Safer* operation.

What do we give you?: The services of trained, licensed technicians to completely clean your furnace and heating accessories. New filters. Examination to discover wornout parts that need replacement, and uncover troubles before they become big — and cost a lot. No mess, no noise, no disturbance of your household routines. Complete compensation and liability insurance for your protection.

What do you give us?: The opportunity to show you what we can do. You're under no obligation when you talk to a salesman.

References: (Here followed a lengthy list of commercial customers, firms whose names were well known throughout the community.)

This memo-proposal was sent one Monday morning to a list of 2,000 prospects in the city. Before two more Mondays had passed, phone calls and reply postcards (which had been included in the mailing) poured in — 382 of them. Almost 300 of these 382 resulted in a maintenance order — an account on the books.

This is but a single example of the way in which Uncle Sam's letter carriers have been recruited by mail-wise *Indoor Comfort* dealers to act as account-opening salesmen. For mass mailings are a powerful selling tool, especially important in any campaign to get new accounts. Today, when it appears that new installations may be harder to sell, despite material shortages, many dealers are turning to direct mail to produce volume during a mobilization economy.

Just any direct mail effort won't work, however. The eastern dealer whose memo-mailing produced an astounding 20 per cent return didn't send his clever, to-the-point piece to every name in the phone book. Instead, he first checked the city tax rolls for homeowners, culling out landlords and choosing only those who owned the houses they occupied. His reasoning in this step was that a landlord would be hardly likely to worry overmuch about fuel bills paid by his tenants who, on the other hand, are often hesitant about paying for service work done on equipment owned by the landlord.

Next, he weeded out the houses where construction was such that they were not likely to have warm air heating systems. "It's possible I may have missed a few prospects by doing this," he says, "but I felt it was better to miss out on a few — after all, there was no guarantee I'd have sold them even if I had addressed mailings to them — than to waste postage and preparation on homes that had no heating systems I could service."

List is Important

His experience points up the fact that the list to which an account-seeking campaign is sent is one of the most important factors in determining its success or failure. The best, most-compelling sales message ever written won't sell many people who are not real prospects. Despite its down to earth copy, it is doubtful whether the dealer's memo-message would have pulled three, much less 382, inquiry returns if it had been addressed to people whose homes were heated by room heaters.

Other angles help to make an account-seeking campaign click. One effective trick is to offer an incentive. One heating company did this by promising the women of the family an inexpensive lamp for opening a paying account.

The manager didn't just say, "I'll give a lamp to anybody who puts his name on our account form." If he had done that, he knew well that he would be flooded with hundreds of answers from people who had no intention of ever buying from him or calling upon his service department for maintenance work, but who did

want the lamp. So he remembered a trick of the mail order houses. The mail order merchandisers seldom offer a free catalog any more. They have learned that thousands of curious persons will write in for it, and then chuck in into a trash bin. Instead, they charge a nominal amount, sometimes as little as 10 cents. Usually, their ads note, this amount will be credited against the first purchase. The cash requirement very effectively weeds out the send-me-anything boys and girls.

Putting an account-opening twist on this idea, he made this offer: The lamp was given to each one who opened an account. To open an account, he had to pay $10. This could be given in a single lump, or else paid $1 a week. Then the $10 was available for spending on service, parts or small purchases, or it could apply as partial down payment against a heating or air conditioning installation. The offer was made doubly attractive by a promise to pay regular savings bank interest — 1½ per cent — on the money deposited on account. "The incentive offer got them in," this dealer reports, "and, humans being what they are, the availability of a credit insured the money being soon spent. Usually, the $10 was only a beginning. It has been our experience that once an account is on the books, the customer uses it. Naturally, there was no need for advance payment once the deposit had been used. The customer could employ his account in any way he chose."

Customer Recommendation

The recommendation of a satisfied customer is a powerful interest stimulant. A western *Indoor Comfort* dealer uses it to make his account-opening mailings bring him tremendous response.

His are not form letters. The procedure whenever a heating or air conditioning installation is sold is for the salesman to follow up after workers have done their job and ask whether the job has been satisfactory. This is a please-the-customer-after-the-sale step that many alert contractors follow. But the salesmen for this firm go farther. They suggest that such a highly satisfactory installation might be of interest to the customer's friends, and that he will be doing them a favor by letting them hear about it. The salesman then requests names of acquaintances and friends of the customer who might be likely prospects. If the customer comes across with the names, the salesman then asks permission to use his — the customer's — name as an introduction. As an incentive for doing this, the salesman notes that part of the company's advertising offer consists of a $15 reduction in price (which will be deducted from his invoice) for permitting use of the name. This takes care of the legal requirement that a man must approve use of his name for advertising purposes. If all goes well, the salesman presents a release form which the customer signs.

Then an individually typed sales letter is sent to each of the names submitted by the sold customer. These are forms, with the name of the satisfied customer mentioned, and a description of the user's installation typed in. "This isn't actually a regular campaign," explains the dealer. "Rather, it is a continuing project. The letters go out following each sale where we secure the needed names and permission. Word of mouth recommendation from a friend is a powerful convincer. We do not wait for him to do the recommending. We organize it. This is an organized recommendation plan. And it works. We get around 40 per cent response to these letters. Each, of course, goes to a real prospect, and the use of the name of this prospect's friend gives the offer attention that nothing else could secure. I haven't figures on the number of inquiries resulting from these letters that we are able to turn into sales, but I'd venture to say it is between 80 and 90 per cent."

Novelty can help an account-opening missive to get results. One dealer mailed out a slogan letter that brought big results. The initials of each line were in heavy type, the following sentences in lighter type. Most the complete message and the quickly-read slogan spelled out sales stories. The slogan letter went like this:

R eaching into the wallet to pay high fuel bills isn't
E asy these days when the
D ollars go so fast. Talking about it is
U seless — when it is really so simple to
C ut these fuel bills.
E stimates of our customers say they save up to 50 per cent.

F irst step in cutting fuel waste is to
U se our cleaning and maintenance service.
E stimates are free.
L et Blank's technicians check your heating system now.

B lank's will change filters, oil blower and adjust controls.
I t costs you little.
L osses of fuel will be cut, air will be cleaner.
L et your family enjoy real winter comfort this year.
S ign the inclosed card and drop it in the mail — today.

Yours truly,

People may drop letters into a wastebasket as soon as it appears to them that the message is an advertisement, a few cranks even drop ads into the floor file, regardless of what they sell, but they'll read a telegram. Even if it is only an advertisement dressed up to look like a wire.

Many dealers use this technique successfully, by having the message set in telegram type, capital letters, on a form designed to resemble one of Western Union's pieces of paper. A frequent heading used is Comfort-Gram, or Heating-Gram. It's a good idea to employ a staccato style, like that which would be used in a genuine telegraphic message.

(One printing firm in New York specializes in producing these, along with yellow window envelopes to match, and filling in each prospect's name in the same telegraphic type as is used for the body of the message. This outfit puts out giant wires measuring 17 by 22 in. — truly impressive when spread out on a desk or table. The price varies by the number ordered. They will do as few as several hundred, as many as tens of thousands.

(Continued on page 146)

Home of Schmidlin Bros.

Schmidlin Plan Ends Sales Problems

ROBERT A. LATIMER
Denver, Colo.

A SALESMAN-COMPENSATION plan, which pays each salesman in direct relation to the amount of work expended in prospect contacting and closing has helped Schmidlin Bros. Heating Company, of Toledo, Ohio, build impressive heating installation volumes.

Schmidlin Bros. located at 3120 Monroe street, carries a complete line of warm air heating equipment, with a specialty installation department for unusual commercial and industrial installations. The company maintains one of Ohio's largest and best-equipped sheet metal fabrication shops, and operates a handsome showroom with operating models of many of the equipment lines handled. Along with these more or less standardized assets, the firm maintains an unusually efficient repair service, which is aimed at getting every sold customer's equipment back into service in a minimum amount of time, a planning service for solving warm air heating problems of all types, as well as specialty sheet metal work. Advertising utilized by Dan M. Schmidlin, vice president of the firm, has likewise been standard, consisting of direct mail, newspaper display ads, followups on new homeowners developed through Dodge reports.

Distinctly not standard, however, is the salesman compensation plan, which Mr. Schmidlin developed 16 years ago, and has operated so successfully that it has eliminated altogether all of the usual sales problems which have affected the warm air heating industry for many years. "I have no sales problems whatsoever. There have not been any sales problems to contend with for the past 16 years." With those surprising words, Mr. Schmidlin sums up the benefits possible from paying the heating salesman in direct proportion to the amount of work he actually does.

Under the plan, Schmidlin Bros. compensates each salesman with a set payment for a specific type of work. For example, the salesman who goes out to a prospect's home, to look over the old heating plant, and to estimate

(*Please turn to page* 148)

News Round-Up

(*From page 64*)

quantity. Close scrutiny should be given any facility where any copper or aluminum product will be used."

The record-keeping required of manufacturers and others operating under the Controlled Materials Plan is set forth in a booklet, "Allotment Accounting for Consumers under CMP," issued by NPA.

The manual explains what records must be established and maintained to account for allotments of steel, copper, and aluminum. It does not specify any particular forms to be used, leaving this to individual businessmen, but does emphasize the requirement that records of controlled materials allotments be accurate in all respects.

Copies of Allotment Accounting for Consumers under CMP may be obtained from the National Production Authority, U. S. Department of Commerce, Washington 25, D. C., and will shortly be available in the department's field offices.

Obituaries

John Rummel

John Rummel, founder of Rummel Heating and Construction Co., South Bend, Ind., passed away June 3. Mr. Rummel had been a heating contractor for 33 years. The business has been purchased by his nephews Earl and Ralph Rummel and will be continued. The new owners have been associated with the company for 26 years.

Frank J. Bishop

Frank J. Bishop, 79, heating and ventilating contractor of Rochester, N. Y., died June 7th after a long illness. He served as chief engineer for the Rochester Board of Education for a number of years. Mr. Bishop retired several years ago.

Current Control Picture

M-47A

July 1 was the effective date for both the controlled materials plan and NPA order M-47A covering the use of iron and steel, copper, and aluminum.

An end-product producer's maximum use of steel, copper, and aluminum will be specified either by his CMP allotment, or if he does not receive an allotment, by the classification of his product under M-47A, except for copper used in building materials, which will be handled separately.

Provisions include:

1. Copper and aluminum end-use limitations are added to existing steel limitations in M-47,
2. Products on M-47's A list are allowed consumption of 70 per cent of steel, 60 per cent of copper, and 50 per cent of aluminum, figured on January-June 1950 base period.
3. Establishment of a new list B in which consumption of steel, copper, and aluminum is set at 85, 80, and 75 per cent respectively, of permitted use during the first quarter of 1951.
4. Relaxation of prohibitions on non-operational use of copper and aluminum in items covered by M-47A, and,
5. Transfer of the point of control of copper and aluminum from the fabricator to the firm which produces or assembles the end-product.

Steel use percentage calculations will be made upon the amount of steel used by the manufacturer in making products during this base period within an item classification of list A and B. Copper and aluminum percentages continue to be based upon a company's use of copper or aluminum for making all products in the base period.

CPR 34

On May 16 the Office of Price Stabilization issued Ceiling Price Regulation 34 aimed at specific control of commercial and personal service establishments. Business establishments coming under the scope of the laws were given until June 16 to comply with its provisions.

In effect the new regulation did not change any prices which had been frozen by the General Ceiling Price Regulation. What CPR 34 was designed to do was require the service establishment to file with the local OPS office the schedule of its charges for services performed. The ceiling price was the highest charge made during the base period of December 19, 1950 to January 25, 1951. This ceiling price list was to be posted where the public could inspect it.

Application of this regulation to the warm air heating and sheet metal contracting industry is principally in regard to hourly charges for labor in the service branch of the business. Any established services such as filter replacement or oil burner service are controlled by this regulation.

CMP Reg. 6

The construction industry has been placed under the controlled materials plan with issuance of CMP Regulation 6 by the National Production Authority, U. S. Department of Commerce.

The new regulation, unlike those covering manufacturing operations, is largely permissive in character. That is, owners and builders may elect to obtain construction materials under CMP procedures, but are not required to do so. Regulation 6 and accompanying instructions for filing form CMP-4C in applying for authorized construction schedules and allotments of steel, copper and aluminum spell out in detail the steps to be taken by owners and contractors to obtain authority to commence construction and if they wish, get materials needed to complete approved projects. The CMP construction regulation sets forth procedures to be followed in applying for controlled materials and A products. An A product is defined as one containing steel, copper or aluminum, fabricated or assembled to the specifications of a particular customer, beyond the primary forms listed in schedule 1 to CMP regulation 1. Most structural steel shapes actually put into place will be A products, according to this definition, NPA said.

B products and other materials needed for approved construction may be obtained by use of the priority rating which will be assigned to projects for which allotments of controlled materials are made.

By the terms of Regulation 6, a prime contractor who wishes to undertake construction must, when required to do so by NPA order M-4 or any other NPA order or regulation, submit an application on form CMP-4C,

or as prescribed, to the appropriate government claimant agency or NPA industry division indicated in schedule A of the instructions for filing CMP-4C, for authorization to commence construction. His application for authority to begin construction may be combined on the same form with an application for an allotment of controlled materials.

A prime contractor who already has received authorization under M-4 to commence construction, or one who has started or wishes to undertake a type of construction for which authorization is not required by that order, may apply for an allotment of controlled materials on form CMP-4C, the regulation states. When a construction schedule has been authorized, the prime contractor will receive an allotment of controlled materials for its completion. He in turn will authorize construction schedules for his subcontractors and make necessary allotments to them from his own allotment.

A prime or subcontractor who has received an allotment of controlled materials will then authorize production schedules and make allotments to producers or others supplying A products for use on the approved project. The supplier, in turn, will make allotments to others making A products to his order, for use in his authorized production schedule.

An owner or contractor undertaking a construction project calling for not more than specified minimums of controlled materials is not required to apply for an allotment. NPA officials said that a direction to be issued under CMP regulation 6 will provide for a self-allotment procedure in such cases. Owners and contractors who need not make application for controlled materials are those whose total quarterly requirements of any controlled materials, including material for class A products, do not exceed the amounts specified below.

(A) For industrial plants, factories, or facilities permitted by NPA order M-4

Carbon steel and alloy steel
25 tons (not to include more than 2-½ tons of alloy steel)

Stainless steel
None

Copper and copper-base alloys
2,500 pounds

Aluminum
500 pounds

(B) For any other construction permitted by NPA order M-4.

Carbon steel
2 Tons

Alloy steel
None

Stainless steel
None

Copper and copper-base alloys
500 pounds

Aluminum
100 pounds

NPA ORDERS

M-1. Amendment of June 8, 1951 increases set-asides of iron and steel castings for rated orders. Monthly set-asides or steel castings range from 75 to 80 per cent of the average shipments in the first eight months of 1950. Galvanized sheets are included in the list of products limited and 40 per cent of production is reserved for rated orders. Lead times vary but 45 days is set in most products.

M-4. Construction order regulates commercial, industrial building as well as luxury housing. Buildings for recreational and amusement purposes are prohibited. Additions, improvements, or modernization of industrial plants or factories where total steel use will not exceed 25 tons are now permitted.

M-6. Steel distributors. To assure flow of carbon steel products to warehouses steel producers are required to allot and ship each month not less than 85 per cent of a warehouse's base tonnage, including DO orders. Base period for warehouses is Jan. 1 to Sept. 1, 1950.

M-8. Tin. Allows use of pig tin to 95 per cent of average monthly use in first 6 months of 1950 for manufacture of tin plate and terne plate. Inventory restricted to 60 days for most tin products.

M-14. Nickel. Prohibits use of stainless steel and high nickel alloys for all sheet metal building applications.

M-15. Zinc. Restricts use of zinc and zinc products to 80 per cent of average use during base period of first 6 months of 1950.

M-24. Tin plate and terne plate. Limits the maximum permitted coating of tin and terne plate. Some applications restricted.

Reg. 4. Maintenance, repair and operating supplies. Provides uniform procedure by which any business enterprise, government agency, public or private institution may use a DO rating (DO 97) to obtain limited quantities of maintenance, repair and operating supplies as well as minor capital additions. It may not be used to obtain materials for personal or household use. Use of materials under this regulation may equal 120 per cent of use during corresponding quarter of 1950.

CMP REGULATIONS

Regulation 1—sets up the basic rules of operation for the Controlled Materials Plan. It explains how steel, copper, and aluminum will be allotted to manufacturers of defense and defense-supporting industries.

Regulation 2—establishes inventory limitations on controlled materials. Carbon steel, alloy steel, and stainless steel are limited to a 45 day inventory. Copper, copper-base alloys, and aluminum are limited to a 60 day inventory.

Regulation 3—establishes the relative preference status of delivery orders for controlled and other materials needed for production of goods deemed essential to the re-armament program and the general economy.

Regulation 4—describes the rules under which distributors may make deliveries under CMP.

Dir. 1 to CMP Reg. 1—gives manufacturers whose operations fall under the Controlled Materials Plan but who use only small quantities of steel, copper, and aluminum in their production a simple method of obtaining needed supplies of those three materials, without applying to the government. Direction 1, issued June 8, 1951, states that a producer of a class B product not marked with an asterisk in the Official CMP Class B Product List need not apply to NPA for controlled material if his quarterly requirements for its manufacture, and the manufacture of all other items in the same product class, do not exceed the following amounts of any of these materials: Carbon steel (including wrought iron), 5 tons; alloy steel (except stainless steel), 0.5 ton; stainless steel, none; copper and copper-base alloy brass mill products, copper wire mill products, copper and copper-base alloy foundry products and powder, 500 pounds; and aluminum, 500 pounds. Direction 1 authorizes him to use the allotment symbol SU (smaller user) on delivery orders for controlled material within the limits set. The quantity of B products he can turn out with the material so obtained, plus that in his inventory, will constitute his authorized production schedule. A producer who qualifies for this procedure is also authorized by the direction to apply the rating DO-SU to orders for production materials, other than steel, copper, and aluminum, required to complete his schedule.

Dir. 2 to CMP Reg. 1—Authorizes producers of controlled materials to apply the rating of DO-PM to orders for production materials (other than steel, copper, and aluminum) for use in producing controlled materials. Direction 2 was issued June 8, 1951.

Arnold Kruckman's Washington Letter

New Construction Regulation

EVERYBODY with a direct or indirect interest in any phase of the construction industries will be concerned with CMP Regulation 6 issued after weeks of testing by NPA on June 21. It carries with it Form 4C which is used to secure allotments of steel, copper, aluminum, and any other materials used by the construction industry. The form also provides the facility to apply for permission to build. It is very comprehensive, a sort of overall CMP application for material and permission to build.

To Contractors

CMP Regulation 6 is particularly addressed to contractors and fabricators who use structural shapes, plates, sheet metal, strip, and all the other forms of steel. It is of course of particular interest to readers of AMERICAN ARTISAN. It is suggested if you have a need for the regulation, and Form 4C that you procure them from your local NPA office. If you want more detailed information, information that is particularly clear and illuminating, contact Harold P. Kelly, Industrial Analyst, CMP, National Production Authority, Washington 25, D. C. Kelly knows your business and is particularly competent to tell you about CMP operations and regulations.

J. D. Wilder and a group of members of the Sheet Metal Contractors' National Association were in Washington for a short time before CMP Regulation 6 was issued. They apparently gave their counsel to the NPA officials who were checking the various industries before finally publishing the order. Wilder and his associates also came to the city to seek clarification of the difficulties many fabricators of various metals have been having with government officials. It appears that government people, apparently working at long range, have demanded compliances and actions which the sheet metal people assumed they had performed. It seems that the more efforts either side made to get together on the confused and complicated problems the more bewildering the situation became.

The Whirl

The sheet metal people spent considerable time in the defense emergency merry-go-round and found that we have not exaggerated the fantastic state of confusion that exists here. The last this correspondent saw of them they were preparing to go to Congress to put their troubles before Senator John Sparkman of Alabama and Congressman Howard Buffet of Omaha, Nebraska. They chose these two because they are vigorous champions of the cause of the small businessman. They also called on Senator Burnet R. Maybank of South Carolina, chairman of the Joint Defense Committee of Congress. Senator Maybank has won sound approval in and out of Congress for the manner in which he has investigated the whole subject of controls and the defense act.

Congressman Buffett is a Republican, a member of the House Banking and Currency Committee. His contribution to the biographical section of the Congressional Directory is one of the smallest in the book. The others leave out no minute detail of their lives. Buffet simply records the most essential facts. What he does not emphasize is the fact that he has been in Congress for 10 or 12 years, and that he has represented a district usually predominantly Democratic in politics. The only time he missed out was in that Truman sweep of 1948. But he came back two years later and was elected to the 82nd Congress. Apparently he had been so useful to his constituents that they were eager to have him back in Washington.

Background

Buffett has had some newspaper training as well as training in finances and as a farmer. He writes particularly pithy and p u n g e n t speeches. He is a man who has greater interest in the welfare of his nation than in the welfare of his particular political party. During this session he has done particularly good work in investigations that have been of benefit to farmers as well as in those that have been useful to business people. If you have a difficult problem it will be wise to communicate with Howard Buffett. He is personable, energetic and a very pleasing individual.

The problem of the supply of building materials is a puzzle. You can hear from responsible persons

Washington Letter

in one agency of government that the materials are all extremely scarce; from another you will hear that they are plentiful. The solution for the puzzle probably is that each agency is temporarily concerned with different specific materials, although they are supposed to keep fairly informed about all materials. For instance, we are told by our friends in the sheet metal industry that sheet and strip steel, copper, aluminum, and other materials of a similar nature, are scarce and very difficult to obtain. But those who should know in NPA, and in Commerce, and in the Housing and Home Finance Agency will tell you that there is plenty of metal for those who have a genuine need for it. Those who need it can get it from their warehouses and distributors, who have definite set-asides under the orders that come from Washington.

The puzzle is why so many contractors and manufacturers who need sheets, and other material, are obliged to procure what they want from the current equivalent of the black market of World War II. This peculiar market is called the gray market by those who are aware of it in Washington. But apparently everybody, victims and observers, in and out of Washington, regards it as perfectly legal.

It is usually described thus: It is a traditional custom for some officials of the steel-producing corporations to be paid some of their compensation in an allotment of the product of the mill. This they sell at a legal price, with the legal mark-up, to certain distributors who either are well known in the trade, or may not be so well known. As the thing works at present, those who buy this steel often, in turn, offer it for sale to others who, in effect, are brokers. And they, in turn, for the third time, sometimes make a sale to someone else, who either acts as a broker again, or sells it to the contractors, operators, manufacturers, who are in urgent need of the material. The point is, each time the steel is resold, each successive seller adds his legal markup. It is clear, from the time of the first transaction, there may be from three to five markups, but each one so far has been construed as legal. We are told here that at present some sheet steel is selling, as the result of these manipulations, at prices ranging from 13 to 18 cents a pound.

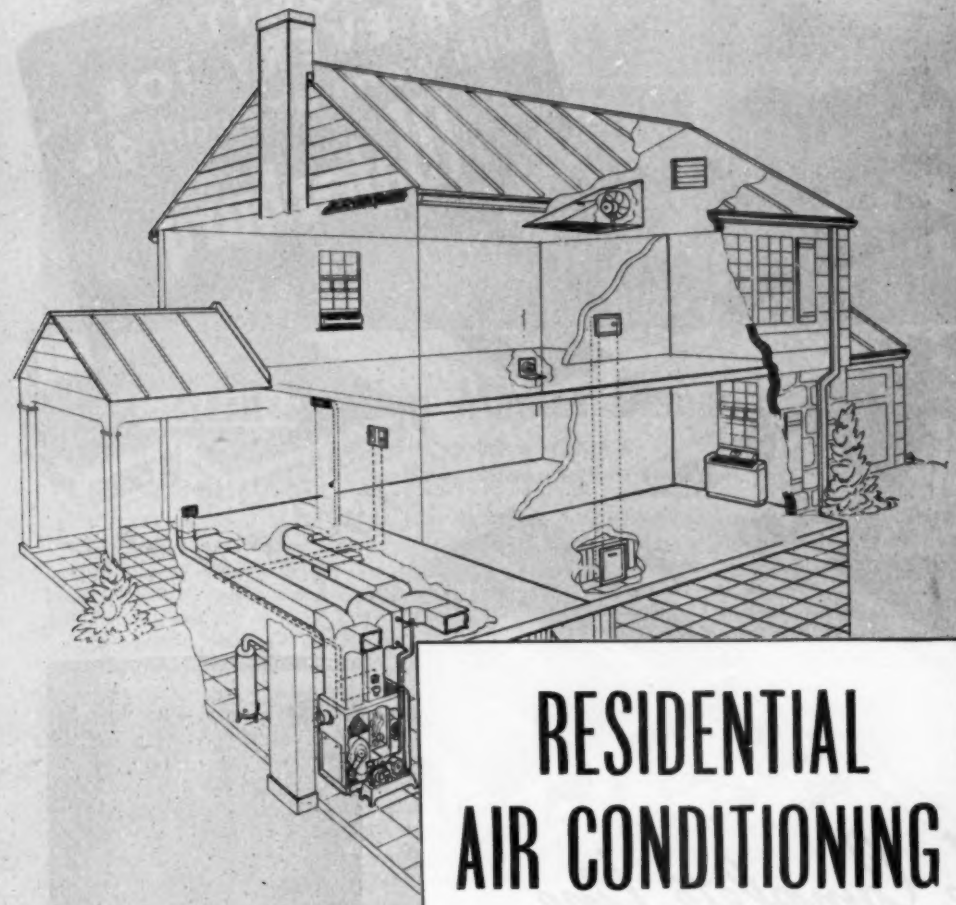
Luxury Housing

The Housing and Home Finance Agency recently issued a new order, an amendment to NPA M-4, which sets a limit of $35,000 on luxury housing. The structure may have only three stories, and also is limited to 2,500 sq ft. Administrator Foley estimates that no house anywhere can be built in this class at this time for less than $10 per sq ft and usually costs $20 per sq ft. Incidentally, a considerable legal building boom is forecast by the announcement recently made in Congress of a number of communities which are expected to be designated as critical defense areas. Any building in those areas will be exempt from Regulations W and X, and other credit and control restrictions. And naturally they will receive CMP defense priorities, and every other advantage to insure swift erection of the dwellings for military personnel and for defense workers.

Hospitals

The Senate has voted $95 million to enable the Federal Security Agency to build new hospitals. Navy has announced $2,681,000 for new construction at the Naval Air Station on Long Island, N. Y. It is spending $4,613,000 at the Air Defense Training Center, Dam Neck, Va. At the Naval Ordnance Test Station, China Lake, Inyokern, Calif., 210 family housing units will be built at a cost of $2,731,200. The Naval Receiving Station, Seattle, Wash., is doing pier construction valued at $1,515.700. At Annapolis the Navy is spending $1,277,400; and at Camp LeJeune, N. C., it is spending $1,126,660. At Little Creek, Va., $1,065,402; at San Diego, Calif., $1,000,000; other contracts either have been let or will be let at Kearney, N. J.; Portsmouth, Va.; Berkeley, Va.; Arlington, Wash.; South Braintree, Mass.; South Weymouth, Mass.; Seattle, Wash.; Oceanside, Calif.; South Gate, Calif.; Quantico, Va.; Sanford, Fla.; Malden, Mo.; Bainbridge, Ga.; Marina, Ariz.; Kinston, N. C.; Butler, Pa.; Greenville, Miss.; Columbus, Miss.; Moultrie, Ga.; Bartow, Fla.; Hundo, Tex. The Navy has announced it will build a hospital at Guam at a cost of $18 million. Army is building extensive new facilities at Winthrop,, Mass., and at Yuma, Ariz. For the Munitions Board, General Services Administration is reactivating the aluminum forgings plant at Erie, Pa., to be in

(*Continued on page* 150)



RESIDENTIAL AIR CONDITIONING

Section

Indoor comfort—in all seasons for homes and small business

A UNIT FOR EVERY JOB...
with warm air heating by
Waterbury

The Complete Line

OF FURNACES AND WINTER AIR CONDITIONERS

When you handle the Waterbury line of furnaces and winter air conditioners, you'll never have to worry about sending your prospects or customers down the street to your competitor for lack of the proper unit or units to fit a particular job. Whether your heating job is for a large or small home, the corner store or the garage at the end of the block . . . there's a Waterbury unit to fit that job. That's because Waterbury furnaces are designed for every size job . . . and every type of fuel.

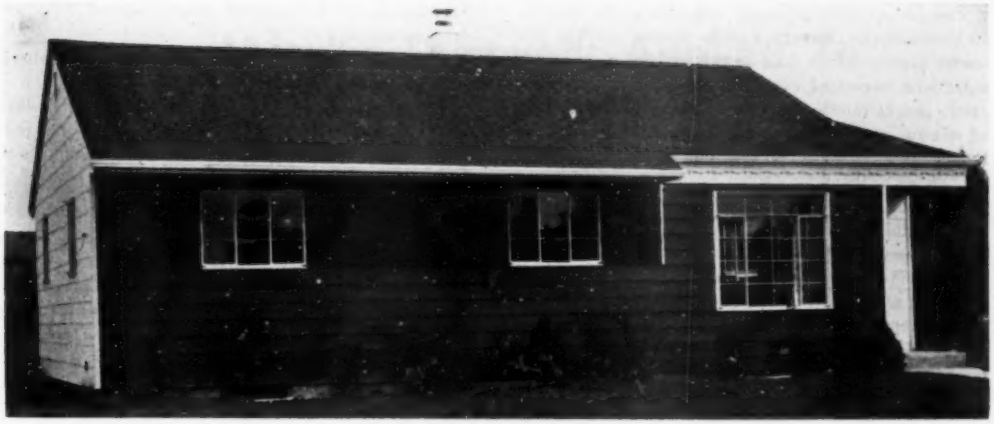
"It's what's UNDER the casing that counts"

1122 JACKSON STREET N. E.

The Waterman-Waterbury Co.

MINNEAPOLIS 13, MINNESOTA

OVER 44 YEARS OF WARM AIR HEATING



Typical Stein house

Eastern Heating Market Demands Quality

HENRY J. WINGATE
Architectural Engineer

A GREATER ratio of houses will be built without basements in 1951 than in 1950, it is predicted by the Construction Research Bureau, New York clearing house for building information, following a new study on housing trends.

Chief factors expected to bring this about include the cost saving of $750 to $1,000 per house made possible by erecting a house on a concrete slab instead of over a basement; and recent development of improved methods of heating the home built on a slab foundation.

Since its advent following the war, the basementless house has steadily gained popularity. As evidence of the trend, nearly one-fourth of all small homes built in the New York metropolitan area in 1949 employed slab construction, although a few years earlier virtually none used this feature. Lower cost of slab construction, coupled with development of modern, compact, automatic laundry and heating equipment which eliminated the need for basements, was responsible for the first surge of basementless building.

Warm Air Perimeter Heat

But since widespread acceptance of any market change in architectural design depends wholly upon whether it provides greater comfort and convenience, the biggest impetus given basementless construction is a new heating method developed for it.

This method, warm air perimeter heat, came into general use less than two years ago and it was only during the past year that its efficiency was thoroughly proved under actual use. Today it is regarded as the answer to any qualms of builders as to concrete slab construction.

Unless proper precautions are taken, slab floors are difficult to heat because there is considerable heat loss from the slab to the earth and the outside atmosphere. Unless the house is properly insulated and the slab is kept warm around the edges, discomfort and dissatisfaction result, builders have learned.

Until about 18 months ago, most slab floored houses were heated with hot water coils embedded in the concrete. Although they realized that low-cost basementless houses would provide a wider market because of the accompanying lower price-tags, many architects and merchant builders were dubious about the length of life of the hot water coil system and therefore continued to provide their houses with basements and conventional heating.

With the development of warm air perimeter heat, however, an increasing number of builders have abandoned their pre-conceived notions and are now turning to slab construction.

Builder Convinced of Efficiency

Typical is the reaction of David Stein, who builds approximately 100 houses a year on Long Island and has just reported the results of a full heating season. This builder installed warm air perimeter heat in 5 basementless houses in an 80 home development in the summer of 1949. The other 75 houses were built with basements because, he said, "Neither I nor the public was convinced that a house with a slab floor could be heated properly."

The first basementless house in this development was occupied on October 1, 1949. Air temperature was kept as 75 F during the day and 70 F at night from October 1st until almost the end of May when the oil fired warm air heating plant was shut down. In these 8 months, the system used $103.68 worth of fuel oil to heat the 3 bedroom house containing 1,025 sq. ft.

Two factors were primarily responsible for this low fuel consumption, according to the builder: 1) The perimeter heating system ducts in the concrete slab near its outer edge prevented excessive heat loss from the concrete; and 2) the fact the house was insulated with 4 in. of mineral wool blown evenly above the ceilings. The builder believes that the fuel bill would be at least 1/3 higher without the ceiling insulation, and that the $34.56 thus saved each year will pay ¼ of the annual taxes on this home.

"I refused to do any slab construction until I was fully satisfied that we could install a heating system that would be efficient, economical and permanent. Results such as reported by our purchasers have convinced me that such a heating system is now available and I will not hesitate to recommend it to future home-buyers."

Ducts Must Be Surrounded By Concrete

As used by this builder and numerous others who have adopted perimeter heating, the system consists of a round galvanized pipe of 8 in. diameter embedded in the concrete 4 in. from the edges of the slab and extending all around the perimeter of the house. Heat is supplied by a feeder duct leading from the forced air furnace in a small closet in the center of the house. The blower forces warm air from the furnace through the ducts and out through wall registers. A return air intake is at the top of the furnace which is adjusted for continuous circulation of warm air. In summer the blower is used to circulate cool air through the ducts to reduce humidity. Dust is eliminated by filters in the furnace.

The most important point in installing warm air perimeter heat is to completely surround the ducts with concrete. The pipes are laid in trenches in the ground lined with a tough paper moisture barrier before the floor slab is poured. They must be held securely in place by rods or tie-wires 2 or 3 in. above the bottom of the trench and the same distance below the surface of the slab while concrete is poured around them. After this sets, the slab for the floor is poured. The finished surface should not be less than 6 in. above the established grade. Round pipes instead of square are used because of the greater strength of the cylindrical shape. The pipes actually serve as a concrete form.

Proper Insulation Is Necessary

Heating experts say that to heat a basementless house properly, it is essential to prevent heat loss from the edges of the concrete slab and prevent cold air flowing down the walls of the rooms. They advise contractors to include proper insulation when writing specifications for slab-floored homes built on the ground without crawl space.

It is recommended that at least 2 in. of insulation be installed between the edge of the slab and the point where it joins the foundation walls, with the insulation turned under the slab and extended about 2 ft. from each foundation wall. A temperature difference of 1 F per ft of height between floor and ceiling will provide comfort, but this cannot be achieved unless exposed walls are fully insulated.

Engineers have found that when walls are insulated full-thick with mineral wool, they are within 2 or 3 F of the air temperature and drafts are virtually eliminated. National Bureau of Standards reports that full-thick mineral wool in walls reduces fuel consumption at least 17½ per cent.

Waterproof Membrane Is Required

Pipe joints should be securely slipped together. Never butt joints because this may result in a blocked-off duct as the slab is poured. Rods and tie-wires will prevent the pipes from floating. It is easiest to fill the narrow space beneath the pipes with a wet concrete mix, but wet concrete should not be used excessively, since it is slow to dry.

In all slab construction, the Federal Housing Administration requires a porous fill and a waterproof membrane beneath the slab. This is especially important with warm air perimeter heat because the bottom of the slab and ducts must be kept dry to prevent excessive heat loss to the ground. A 4 in. fill of coarse gravel with all the fines screened out by a ¾ in. screen is recommended. Cinders should not be used as they will disintegrate and later cause the slab to crack.

Heavy reinforced waterproof paper or 55 lb roofers' felt should be used as a continuous membrane between the fill and the slab. This should extend under the ducts, completely cover the area within the foundations and extend up the sides of the foundations to the top of the slab. All joints of the paper must be lapped and sealed and sealing compound should be used at every point where the membrane is pierced by water or other pipes. When the slab is being poured, care must be exercised not to puncture the membrane nor to crush the ducts. Any holes in the membrane made accidentally should be sealed.

Types of Heat Registers

Either floor or wall registers can be used to supply warm air to the rooms. Wall registers were used in the Stein houses because they did not take up valuable floor space and the wall location eliminated the possibility of excessive amounts of dirt collecting in the warm air ducts. To afford maximum heating efficiency, the registers were placed beneath the windows.

Register locations should be selected and marked before the slab is poured by placing a wooden or sheet metal form of correct size on top of the duct and securely attaching it to the pipe. These forms, which actually are the register stacks, can be made integral with the heat ducts by the contractor on the job. Register boxes, stack heads and all duct connections must be installed before the slab is poured.

Since efficient thermal insulation is highly important for economical heating of a basementless house, engineers recommend that the register and stack be set into the wall so that at least 2 in. of insulation can be placed between the stack head and the cold exterior wall.

Non-Metallic Ductwork Applied To Concrete Slabs

With the diversion of great amounts of metal to the national defense effort the shortage of light gauge steel has been growing. Here is a substitute for metal in a warm air heating installation.

THE SHEET metal shortage, already being felt by heating men, is forcing them to cast about for suitable materials for ductwork in perimeter heating.

That there is no single overall solution to this shortage problem is shown by the large variety of materials which they are adapting to this use.

Various Materials

In some localities sewer tile is being used, in others drain tile. There are also reports of paper tube, concrete forms, concrete pipe and asbestos concrete composition pipe.

All of these products have other uses in the building industry so heating contractors turn to them with foreknowledge of the problems involved in installation and of the characteristics that make them adaptable for ducts in warm air heating systems.

Of course, price of the adapted materials is a very important factor in their selection. In an area where sewer tile is manufactured there will be found more installations where this material has been substituted.

In areas where high transportation costs of tile pipe make it expensive, heating contractors are turning to other material.

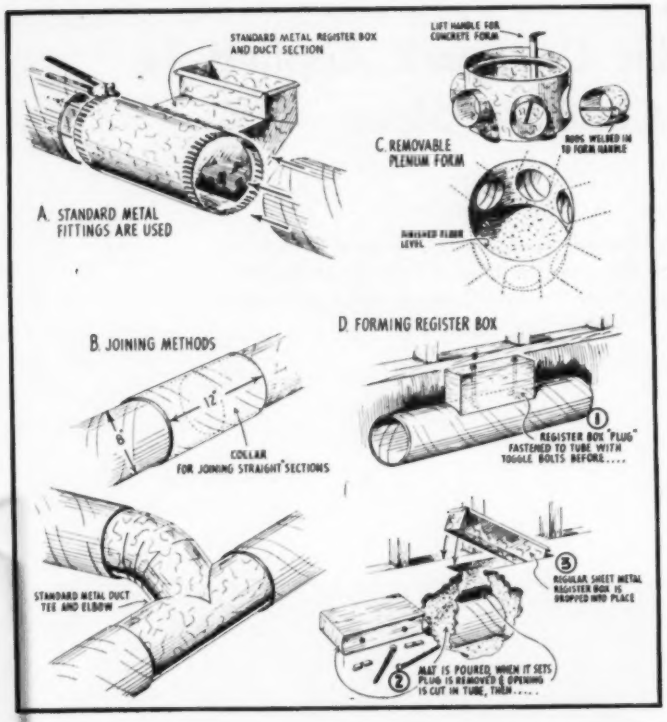
Of course, as the shortages become more acute each contractor will undoubtedly have to pick up job-size lots of any suitable material that may at the moment be available in his supply yards so that he can complete his heating contract.

Typical fiber duct installation.

But the shortages may be a blessing in disguise. This is indicated by the number of entirely new materials being developed especially for perimeter warm air heating.

Many of these materials which might have had a long uphill fight against traditional materials are being offered an opportunity to win rapid acceptance.

Data, illustrations, and diagrams from News and Views, published by Viking Air Conditioning Corp.


STANDARD METAL REGISTER BOX AND DUCT SECTION
A. STANDARD METAL FITTINGS ARE USED
LIFT HANDLE FOR CONCRETE FORM
C. REMOVABLE PLENUM FORM
RODS WELDED IN TO FORM HANDLE
B. JOINING METHODS
12"
6"
COLLAR FOR JOINING STRAIGHT SECTIONS
D. FORMING REGISTER BOX
1 REGISTER BOX "PLUG" FASTENED TO TUBE WITH TOGGLE BOLTS BEFORE....
STANDARD METAL DUCT TEE AND ELBOW
3 REGULAR SHEET METAL REGISTER BOX IS DROPPED INTO PLACE
2 MAT IS POURED, WHEN IT SETS PLUG IS REMOVED & OPENING IS CUT IN TUBE, TRIM....

This type of plenum remains in the slab

As has happened so often before many of these materials may find a permanent place in the industry.

Chipboard paper tubing intended for use as containers, mailing tubes, and concrete pillar forms is finding its way into perimeter heating jobs all over the country. Tubing used for this purpose should be waterproof or coated with waterproofing compound. This type of tubing is manufactured in most localities so it is available to most heating contractors.

One such tube for slab heating, is made of laminated fibers, rolled diagonally resembling the familiar mailing tube.

This tubing is impregnated with a plastic bonding adhesive which cures when it is subjected to heat under operation. This chemical change, called polymerization, is said to make the tube even stronger and more permanent.

The material, comes in long rigid, light-weight tubes in sizes from 2 to 24 in. inside diameter, and up to 24 ft in length. It is easily cut to any desired length by hand saw or power saw like any other composition material.

This tubing has been used in about 1,500 to 2,000 homes and appears to be very easy to handle on the job. It has been approved by the Federal Housing Administration for use as supply or return ducts "when embedded in concrete."

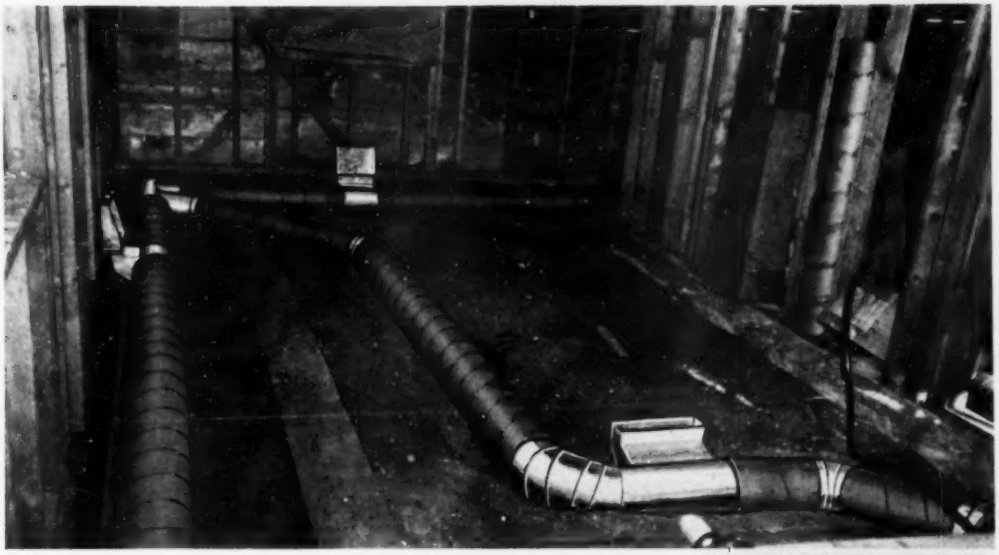
The fiber tube for perimeter heating is handled and installed in much the same way as sheet metal.

Perimeter heating specifications recommended by the National Warm Air Heating and Air Conditioning Association (see Manual No. 4) should be carefully followed with this as with any other material.

The only fitting made for this duct is a square cut collar of the same material. It is 12 in. long and just large enough in diameter to slip over the fiber ducts on straight joints.

The manufacturer recommends the use of standard sheet metal fittings at corners, joints and register boxes.

This fiber duct is made in a range of inside diameters which will fit over the standard sizes of sheet metal



Metal fittings are used with the duct

fittings with crimped ends. Sheet metal screws may be used to secure the joint if that seems necessary.

In some installations the joints have been wrapped with tape or heavy paper, although this is not needed if the joint is tight enough to keep wet concrete out of the duct. It should also be secure enough to withstand the pouring of the slab.

Register Plug

If the registers are to be directly over the duct a wooden concrete form may be used. This plug should be of a shape and size to fit the register which will be used.

The plug is fastened longitudinally to the tube with long toggle bolts before the concrete is poured. When it has set, the bolts are removed and the plug lifted out.

Then the exposed section of the duct is cut out with a keyhole saw and a standard sheet metal register box slipped into the opening.

Plenum treatments are left to the individual heating man. Permanent plenum forms are practical when only one or two houses are going up on the same site.

These may be regular sheet metal plenums fitted with collars to slip inside the ducts. These plenums go permanently into the slab.

In one installation, however, a reusable plenum form was used. This is a cylindrical form with duct openings which correspond to the same heating plan used in all the homes. Removable metal collars slide through these holes and extend out of the plenum.

The ducts are slipped over these collars and butt snugly against the outside of the plenum.

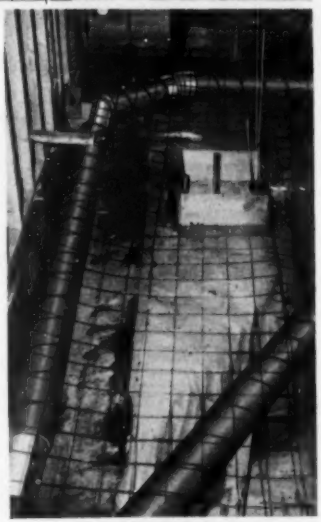
The collars position the ducts firmly so the plenum form may be leveled and used as a base point for leveling the whole system.

After the slab has set, the collars are withdrawn and the plenum form lifted out.

There is no bottom in this form, so the floor of the pit is poured after the main slab has set and the form has been removed.

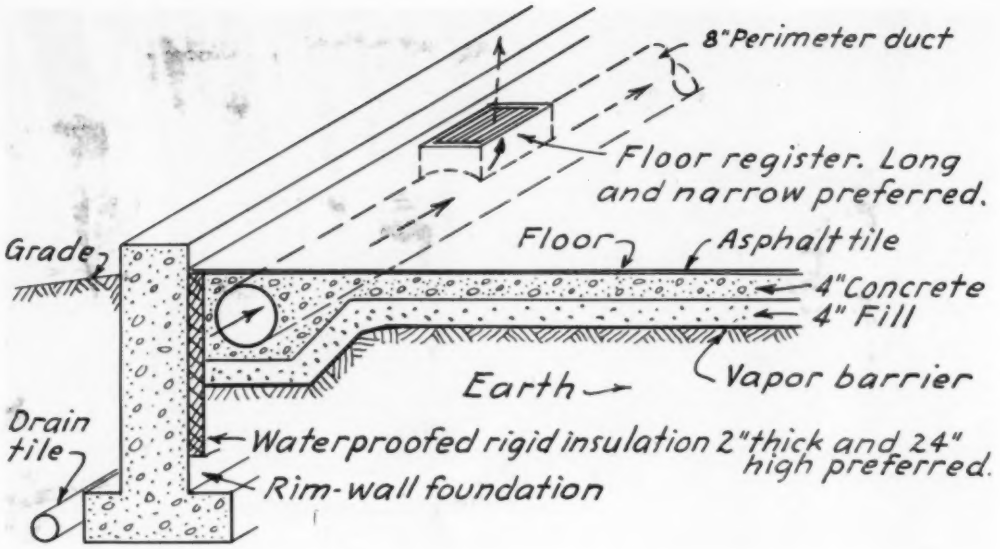
Anchoring

It is necessary to anchor this fiber duct during the pouring because of its light weight (1½ lbs. per foot for the 8 in. duct). This may be done with tie-down rods, bricks wired to the tubes or any of the other methods recommended in National Warm Air Manual No. 4. The reinforcing mesh directly over the ducts can also aid in anchoring the pipe.



Standard reinforcing helps to anchor the tubing

These installation practices have been found workable by heating men in the field. Variations of these methods will undoubtedly suggest themselves to progressive contractors who work with this type of material.



These Three Steps In Slab Construction Prevent Heat Waste

IN any perimeter heating system one of the most important factors in its performance is the construction of the floor slab. There are three phases of this construction that must be present for efficient operation:

1) Adequate edge insulation;
2) Sealed waterproof membrane;
3) Ample porous fill.

Engineering necessity backs up the presence of each of these elements in the concrete floor slab used for warm air perimeter heating.

Conductor

Concrete is a very good conductor of heat. Since the ducts carrying heated air are located within a few inches of the cold exposed wall it is clear that insulation is necessary to prevent loss of heat from the edges of the floor slab. Recommendations of most authorities call for 2 in. thick insulation extending from the top of the floor slab down 18 to 24 in. It has also been determined that extending the insulation horizontally under the slab 18 to 24 in. will give better heating results.

The proper type of insulation must be installed or the precautions taken will be useless after a few years. Any insulation used for this purpose must be waterproof and termite proof. If the insulation is not waterproof it will ultimately become waterlogged and lose its insulating qualities. A fibrous board insulation which has not been waterproofed on all sides and edges is not suited to this application. All raw edges must be thoroughly coated with waterproofing material.

There is a difference of opinion on the matter of the proper location of the waterproof membrane. Some authorities advocate placing it beneath the porous fill while others feel that the best location is above the fill. It is quite possible that this question is best determined by the location of the house. If the house is to be built on a high, well drained site the membrane may be equally effective above or below the fill. However, since it is important to keep moisture away from the concrete slab, the membrane should be placed below the fill in any location where the water table is high or water is likely to drain toward the foundation.

Membrane

The membrane should be waterproof and tough enough to withstand damage during the pouring of the concrete. It should completely cover the area within the foundations and extend up the side of the footings to the top of the slab. All joints should be lapped and wiped with a suitable sealer. Every place where the membrane is pierced by water and sewerage pipes should be re-sealed. Heavy waterproofed, reinforced paper or 55

lb roofing felt is adapted to slab use.

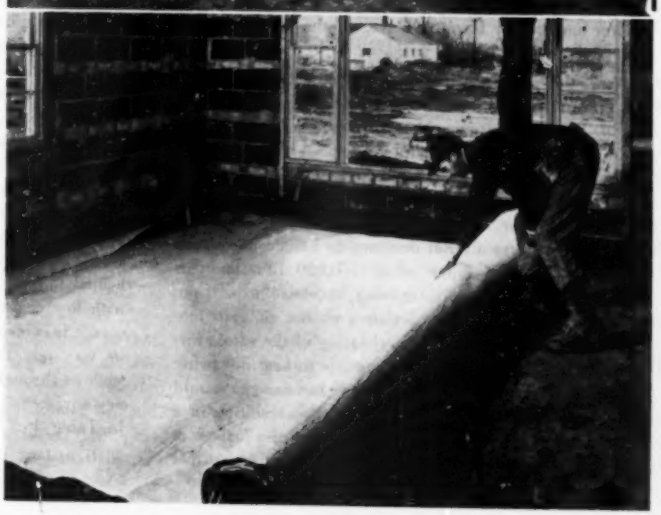
Choice of fill material is important to the slab construction. The fill should be gravel or crushed rock which has been passed over a coarse screen to remove the fines. Any material which is likely to break down into fines after a few years should not be used in slab construction. As shown in the diagram it is customary to specify 4 in. of fill beneath the concrete slab.

A drain tile is shown outside the foundation in the diagram. This is helpful in a location where drainage is a problem. At other sites it may not be needed.

Characteristics of the site on which the house is erected are a basic factor in slab treatment. Drainage and water table can affect slab construction to a considerable extent. It is the duty of the heating contractor to acquaint himself with all conditions and plan the installation accordingly.

Step 1. Insulation must be placed between the edge of the slab and the foundation. Recommended thickness is 2 in. and it should extend down a minimum of 14 to 18 in.

Step 2. Porous fill 4 in. deep should be placed under the concrete slab. Material used for this fill should be selected for its durability and drainage characteristics.



Step 3. A waterproof membrane is necessary to keep the bottom of the slab dry. Preferred location for the membrane is beneath the fill. Local ground conditions may make it effective above the fill also.

Open For Discussion

FOR THE PAST six years we have been setting inputs on our gas conversion burners in hot water boilers, gravity and forced warm air furnaces at the heat loss calculated according to the American Society of Heating and Ventilating Engineers *Guide*. In steam boilers we have been increasing this about 50 per cent. One of the officials of the utility where most of these burners were installed, told me when we started this practice his company was very much worried that they would be flooded with no heat calls on sub-zero days and be required to increase the input. However, up to the heating season of 1951 they have never had a service call for this complaint on approximately 500 burners.

Money No Object

Now, let us analyze the reasoning behind this. You would not think highly of a carpenter who measured a door opening at 3 ft by 8 ft and then proceeded to install a 6 ft by 16 ft door just to be sure it was big enough. In the old days a furnace man would come into a home and from his past experience quote on a 22 in. furnace. The homeowner would say, "Jim, I've got plenty of money. I want to be warm and have a furnace that lasts, so put in a 24 in. so I won't have to force it." Jim would do this, and in a year or two the fire pots on the 24 in. furnace would burn out. The reason for this burning out was that the total piping of warm air leads and cold air returns were only adequate for a 20 in. furnace, so that with the installation of a 24 in. furnace the unit generated so much heat that could not escape through the leads that burned itself up. That is why some of the poorer undersized furnaces have, to the amazement of everyone, outlasted better furnaces.

Now, the practice of utilities at present is to fire to the grate area of the furnace or boiler. Example: for a 22 in. cast iron furnace 106,000 Btu input is specified. Most 22 in. cast iron gravity furnaces are rated at no more than 65,000 Btu. A good furnace will absorb this heat from most burners with varying degrees of efficiency. However, in the Chicago area 80 per cent of the warm air furnaces are not designed to handle more than 50,000 Btu. With input set at 100,000 Btu, the furnace would heat rapidly, causing excessive expansion. It would not give gravity action a chance to gain momentum, with a consequent overheating of the whole furnace. This sluggish gravity action due to heat not being able to get out of the warm air leads fast enough would accumulate and back into the returns, this resulting in a higher flue temperature and loss. This also causes a short on period and a long off period, allowing normal gravity action to stop completely, with the result that extra momentum is needed to start air flowing again.

This excessive input could be compared with the spinning of automobile wheels on icy pavement when getting started, as against slower application of power which maintains wheel traction. These excessive inputs led to the abandonment of warm air limit controls in gravity heating systems in a number of areas due to the burner being shut off by what was called a false safety. The bonnet temperature reached the top temperature of the limit control and shut the burner off even though the thermostat was not satisfied. This showed that the gravity action had not started fast enough to carry away heat being generated by excessive input.

There are several reasons given for excessive inputs, one being that even normal combustion efficiency will cut 100,000 Btu input to 80,000 Btu output. This may be true. If it is, evidently the calculation of heat loss has enough safety margin to take care of this.

Piping Loss

The second reason given is piping loss in basements, walls, etc. To dispel this bugaboo, you will find scattered all through the Gravity Warm Air Heating Digest of research residence experiments at the University of Illinois statements such as the one that appears on page 375, the last paragraph: "Overall efficiency of residence and heating system — the loss of heat from the top of the chimney when an inside chimney is used is the only ultimate loss of heat from the house. By subtracting from 100 per cent the percentage losses at the top of the chimney, the overall efficiency of the house and heating installation can be determined." Page 376, last paragraph: "Heat loss between furnace and registers — of the heat carried in the air leaving the furnace, a portion was lost by radiation and convection from the leaders and stacks. It may be seen that exactly three-fourths of the heat available at the bonnet was delivered at the registers. This loss of 25 per cent between furnace and registers has the effect of reducing the efficiency of the system as a whole, as shown in the lower curves of Fig. 242. Bearing in mind that the residence was heated to 70 F with high overall house efficiencies but with low register air temperatures and register efficiencies, it is evident that a large percentage of the heat found its way into the rooms of the house by indirect paths such as through the floors and walls and from the chimney surfaces. An estimate of this indirect heat is shown in Table 45."

Right here I would suggest that everyone in the heat-

ing business, whether an oldtimer or a newcomer, take the time to thoroughly study all of the experiments listed in the Gravity Warm Air Heating Digest of Research, Engineering Experiment Station, University of Illinois, published by the National Warm Air Heating and Air Conditioning Association, Columbus, Ohio, copyrighted 1935; this in fairness to yourselves and your customers. Even though the book is now 16 years old, there is a tremendous amount of basic knowledge which will give a background for solving everyday problems and for sales work.

The Pickup Problem

The third reason is pickup. If the homeowner comes home and finds his thermostat set at 50 and raises it to 70, he doesn't want to have to wait a long time to get results. Assuming a heat loss calculation for the residence of 100,000 Btu, 80 per cent of the weather in the Chicago area is above 30 F. So 80 per cent of the time if the input of the burner was set at the heat loss of the house, there would be two-thirds excess capacity available for pickup. Of the remaining 20 per cent, 18 per cent is above zero. This would still leave an additional one-third for pickup. The remaining 2 per cent of the time is the only time that the full 100,000 Btu input is necessary. Now, these sub-zero temperatures occur only between 1:00 a.m. and 7:00 a.m., so that the homeowner would have to return from Florida to his home between these early morning hours on the particular sub-zero night, finding his thermostat set at 50 and raising it to 70 to have any use for the extra pickup capacity. I do not see that this is justification for excessively heating the furnace 98 per cent of the time; inferior comfort conditions due to short firing and long off periods 98 per cent of the time; increased operating costs to the homeowner; increased operating costs due to excessive peak loads for the utilities, resulting in higher rates to the customers and limiting gas availability for heating due to this policy. It is true that there may be occasional heating systems so poorly designed that they need excessive furnace temperatures. From our experience, and we have particularly sought out the so-called poor equipment and installations, we have never come across even one. We have consistently taken installations on which the utilities have advised the owners against conversion to gas. It doesn't make sense for a heating contractor to accurately calculate heat loss of the house by any of the various methods and arrive at a calculation and then say, "Let's be safe and double it." You wouldn't buy a 20 ton truck to take care of a 5 ton job 80 per cent of the time, an 8 ton load 18 per cent of the time and a 10 ton load 2 per cent of the time. You would buy a 10 ton truck.

Another bad result from this excessive input is that the stack size must be increased to take care of this large input. This means that during off periods of the furnace the extra large stack is pulling basement air and heat out of the home. It requires a larger size pipe from the meter to the furnace, increasing installation costs, particularly at a time when steel is critical. It requires oversize controls and an oversize burner, all increasing costs and inefficiencies. It requires the utility to put in an oversize meter, and in cases where the service capacity is too small for the excessive input, it requires an additional cost to the utility or the denial of service to the customer.

In summary, I believe the following: That inputs into gas heating equipment, whether designed or conversion, should be at the calculated heat loss of the building, taking into consideration any insulation or storm windows. If this does not heat the home, correct the heating system. Do *not* penalize the general public and the utilities for an inferior heating system.

WM. P. AYERS

Radiant Burners, Inc.
Lombard, Ill.

THE ARTICLE BY Samuel S. Robinson in AMERICAN ARTISAN May 1951, is very good, indeed. The service angle has done more to harm this industry than any other phase of the business.

Why is this? Service is a most necessary part of any mechanical device, whether it be an automobile, a heating system, or any other appliance.

In the domestic appliance field, service is stressed very prominently because dealers know there will be service problems from time to time. It would be fool-hardy to purchase an automatic washer where service is not forthcoming. The customer knows this and for the most part will purchase only where such service is available. The last few years have seen the demise of those war born appliance dealers who forgot that service was a very essential part of business.

Heating service is vital to the heating dealer, more so than to the appliance dealer because it must be immediate in cold weather. Any heating man knows that a cold customer is a tough gent to deal with, if he is kept waiting long.

Correct Installation

Personally, I believe that service on automatic heating equipment can be cut greatly by proper installations alone. Cheap equipment and slip-shod installations will breed complaints that throw a shadow over better units and first class workmanship, which will reflect on the industry as a whole because the wagging tongue of the layman cannot distinguish between the two. He still thinks his equipment should perform like a thousand dollar job even though he cut the salesman down to five hundred and ninety-eight.

As Mr. Robinson says, the manufacturer has an important part to play in regard to service. He most certainly keeps the dealer in the dark, not intentionally, perhaps, when he changes his product, even though he might inform his distributor. The distributor doesn't set up these units, and in many cases knows little about their mechanical features anyway. (*To Page* 154)

Draft Control Installation Made Easy

WAYNE M. DAVIS

Space restrictions in many modern heating installations make location of the draft control a difficult problem. Here are some practical tips on installing a draft control on a smoke pipe elbow.

AFTER making several draft control installations, a serviceman soon learns that all jobs are not ideal applications where the control is simply strapped on a straight run of flue pipe. A good number of controls will have to be installed on heating units located in restricted areas where only an elbow is available in the pipe leading from the unit to the chimney.

In a case like this the preferable location for the control would be in the chimney, but some servicemen have found that when caught short of time they can make satisfactory installations on an elbow.

To make this installation without frayed tempers and scattered elbow segments, it is necessary to follow five simple steps which include merely a logical progression from one phase of the job to another.

First, slip the collar of the control over the elbow, to test it for fit. If the fit is looser than desired, cut and trim the collar until a tight fit is obtained and the control is level.

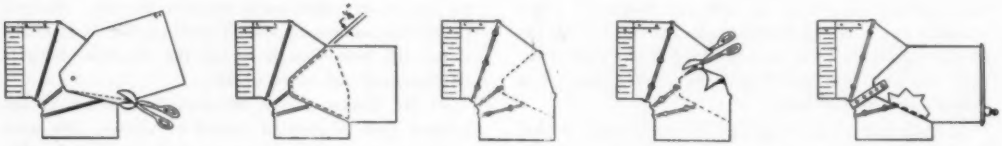
When the collar fits tightly mark the area to be cut away under the collar. This should be about a quarter of an inch, *less* on all sides than the area covered by the collar.

Remove the collar and after drilling or punching the proper size holes, insert metal screws in the joints of the elbow where they will not be cut away when the opening for the control is cut. This will serve to hold the entire elbow together and when combined with the control will prove almost as strong as the original elbow.

Cut out the area marked off to be cut away, and then cut a number of slits about ¼ in. deep into the margin left around the edge of the hole. Install the control, fastening it on with the strap provided. Then bend the slit portions, or ears, up inside the collar, making a tight seal.

A control will fit an elbow that is nominally an inch or so larger or smaller. Proper shaping of the collar before installing, as described in AMERICAN ARTISAN, November 1949, will result in a good fit. The collar must be worked into an oval shape before collar fit is tested on the elbow.

The gate of a control installed on an elbow will be subjected to some blast from the hot gases in the flue pipe, and therefore, is not as desirable as placing the control in the chimney. The blast of gases will affect accurate performance, but the regulation possible more than offsets this factor. When a serviceman follows the simple steps described, he can make quick installations on elbows — and still keep his temper.



Step 1. Test collar on elbow for fit, cut so control is level.

Step 2. When collar fits tightly, mark area to be cut away. Mark ¼ in. less than collar on all sides.

Step. 3. Punch holes, insert metal screws where elbow will not be cut away.

Step 4. Cut out marked area that control will cover. Cut slits ¼ in. deep into margin around hole.

Step 5. Install control, strap it on, bend flange up around inside.

Resistance Concept Of Heat Transmission
Part III

S. KONZO
Professor of Mechanical Engineering
University of Illinois

IN THE PREVIOUS INSTALLMENT, values of thermal resistance were presented for air spaces bound by ordinary non-reflective materials as well as reflective materials. It was shown that reflective insulation, such as aluminum foil, can be effective as a heat insulator. Values were also given for the thickness of wool insulation that is equivalent to an arrangement of reflective foil in a wall section.

In this issue additional data will be presented of the resistances of horizontal and inclined air spaces which are faced with reflective insulation. The problem of handling thermal resistances which are in a parallel circuit is discussed. For this purpose, an electrical analogy will be used, as in the first article in this series.

Air Space Resistance, for Reflective Insulation in Horizontal and Inclined Surfaces.

The best available data on the resistance of an air space in which reflective insulation is used, are those published by Wilkes, Hechler, and Queer. Fig. 11 was redrawn from the original paper and gives a simplified summary of results obtained with four different arrangements of the foil insulation. Results are shown for both upflow and downflow of heat.

In general, aluminum foil is far more effective in resisting downflow of heat than it is in resisting upflow. For example, in type 5 the resistance value under winter conditions is 3.70 units for upflow, but 10.00 units for downflow heat transfer. This means that type 5 installation will be more effective in winter when installed between floor joists exposed to a cold crawl space than when it is installed between ceiling joists exposed to a cold attic. This comparison is true of course only when the temperature difference between two sides of the building construction is the same.

Furthermore, as was also observed to be the case in Fig. 9 in the previous installment, reflective insulation is relatively more effective under summer temperature conditions than in winter. As explained previously, this is the reverse of the trends shown with solid or fill types of insulation, for which the resistance values tend to increase with higher mean temperatures of the material. Therefore the ideal application for foil insulation is for resistance against summer heat flow.

Equivalent Thickness of Wool Insulation Represented by Reflective Insulation.

As in the case of Table 4 in the previous installment, it is possible to derive values of equivalent thicknesses of insulation for each of the arrangements shown in Fig. 11. These values are listed in Table 5.

The most striking feature of Table 5 is the effectiveness of reflective insulation when applied below the floors above a crawl space under winter conditions and when used to insulate a ceiling in summer. As stated previously, reflective insulation is relatively most effective in resisting downflow of heat. Some confirmation of this conclusion is stated in the Report on Tests for Condensation on Reflective Insulation Under Wooden Floor by Laurence Shuman, (Tech. Bulletin 12, Jan. 1950, p. 9 of the Housing and Home Finance Agency). In this investigation, one layer of asphalt paper faced on both sides with aluminum foil was applied ¾ in. below a wood floor, over an unheated crawl space. In another arrangement, a second layer of the same material was placed ¾ in. below the first. The following conclusions were stated in the paper:

"1. Condensation will not occur in wood floors over crawl spaces where reflective insulation is installed in a normal fashion with some percentage of openings which permit air to pass through (The openings consisted of ⅛ in. diameter holes spaced one hole per sq ft to permit drainage of any condensation which might occur).

"2. The temperature of the insulation should remain above the dew point of the air in contact. The relative humidity of the air in the spaces within the floor structure is unaffected by opening or closing the crawl space.

"3. A perfect vapor seal by means of the reflective insulation or other material is neither necessary nor desirable and would probably permit condensation to occur in some cases. Perforations of the type used assure air flow upward through the floor structure and provide drainage for water which might leak through the floor from above.

"4. Reflective insulation produces a marked rise in the temperatures of the floor surface." (At 72 F inside and 32 F outside the floor surface temperatures were raised from 6 to 8 F, although the air 2 in. above the floor showed little variation in temperature. Heat loss through the floor was materially reduced by the insulation).

Electrical Analogy of Resistances for Parallel Circuits.

Up to this point in the discussion, heat transfer has been considered to be through a number of resistances in series arrangement; that is, where the resistances follow each other in succession. Occasionally it becomes necessary to consider the flow of heat through a parallel ar-

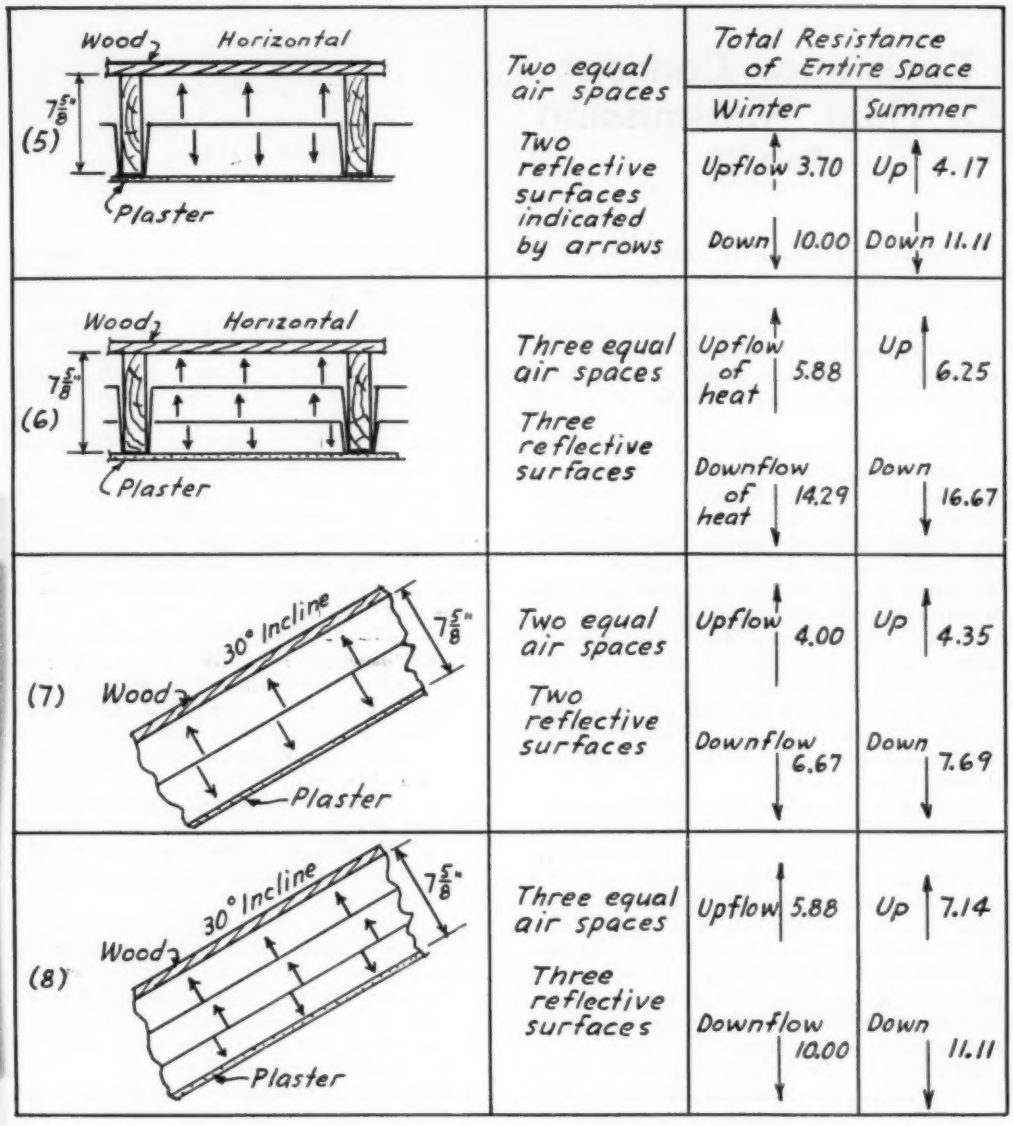


Fig. 11 Resistances of horizontal and inclined air spaces having reflective surfaces. (Based on data of Wilkes, Hechler, and Queer, ASHVE Trans. vol. 46, 1940, p. 113.)

rangement of resistances. This subject becomes complicated, but some general conclusions are worth mentioning so heating contractors can avoid obvious pitfalls that result when the resistances are arranged in parallel.

For simplification we shall make use of the electrical analogy that was presented in the first article. For the simple arrangement shown in Fig. 12, the total resistance is not equal to the sum of R_1 and R_2. That is, the total resistance is not 100 ohms plus 10 ohms, or 110 ohms. Neither is the current flow I_1 equal to 110 volts divided by 110 ohms, or 1 ampere. In Fig. 12 we have assumed that 110 volts is applied across the junctions a and b. The current flow for the upper coil I_1 is equal to E/R_1. Also, the current flow for the lower coil I_2 is equal to

TABLE 5.

Equivalent thickness of wool insulation represented by the reflective foil insulations shown in Fig. 11.

Reflective foil installation shown in Fig. 11.	Winter Conditions		Summer Conditions	
	Upflow as in ceiling joist	Downflow as in floor joist above crawl space	Upflow as in floor joist	Downflow as in ceiling joist
Type 5	0.79 in.	2.42 in.	0.92 in.	2.72 in.
Type 6	1.38 in.	3.58 in.	1.48 in.	4.22 in.
Type 7	0.87 in.	1.56 in.	0.96 in.	1.84 in.
Type 8	1.38 in.	2.46 in.	1.72 in.	2.76 in.

Notes: Resistances of the air space for non-reflective materials were assumed as 1.06 units for downflow of heat and 0.76 for upflow of heat. These are for horizontal air spaces and apply to types 5 and 6 only. For types 7 and 8 the available data by Wilkes and Peterson give, for a 45 deg slope, the resistance values of 0.89 units for downflow and 0.79 units for upflow for the air space. The wool resistance was assumed as 3.70 units per in. of thickness.

E/R_2. Finally, the current flow I_t is the sum of the current flows in the two separate coils. In equation form this simplifies to:

$$I_1 + I_2 = I_t \qquad (10)$$

or

$$\frac{E}{R_1} + \frac{E}{R_2} = \frac{E}{R_p} \qquad (11)$$

where

R_p = equivalent resistance of the parallel circuit if we consider the two resistances replaced by a single imaginary resistance.

Equation (11) reduces to the form:

$$\frac{1}{R_1} + \frac{1}{R_2} = \frac{1}{R_p} \qquad (12)$$

This equation could be simplified further, but it will be more convenient to leave it in this form. If three or more resistances were involved in the parallel circuit, additional terms of $1/R_3$, $1/R_4$ etc. would be introduced into equation (12) for determining $1/R_p$. With few exceptions however, it will not be necessary to use any equation that is more complicated than equation (12).

Thermal Resistances in Parallel.

Now consider the form in which resistances to heat flow will commonly occur in practice, as shown diagrammatically in Fig. 13. In this case, resistances *1* and *3* are connected in series to a parallel circuit composed of resistances *2'* and *2''*. In order to determine the total resistance of the system, resistances *2'* and *2''* in the parallel circuit must be changed to equivalent resistance *2* as indicated in the lower diagram of Fig. 13. For this we shall make use of equation (12).

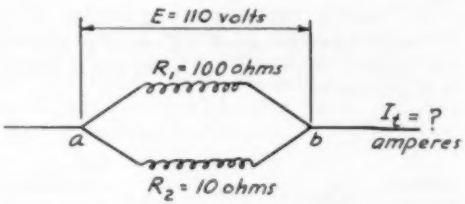
For example, assume that the resistance values in the upper diagram of Fig. 13 are as follows:

R_1 = 0.61 units,

R_2' = 2.0 units,

R_2'' = 4.0 units, and

R_3 = 0.17 units.



Given: E = 110 volts

R_1 = 100 ohms

R_2 = 10 ohms

To determine the current flow, I_t

Solution is as follows:

a) $I_1 = \frac{E}{R_1} = \frac{110}{100} = 1.1$ amperes

b) $I_2 = \frac{E}{R_2} = \frac{110}{10} = 11.0$ amperes

c) $I_1 + I_2 = I_t = 12.1 \text{ amperes} = \frac{E}{R_p}$

in which R_p is equivalent resistance of parallel circuit.

d) $\frac{E}{R_1} + \frac{E}{R_2} = \frac{E}{R_p}$ or

e) $\frac{1}{R_1} + \frac{1}{R_2} = \frac{1}{R_p}$

Fig. 12 Analogy of simple parallel circuit.

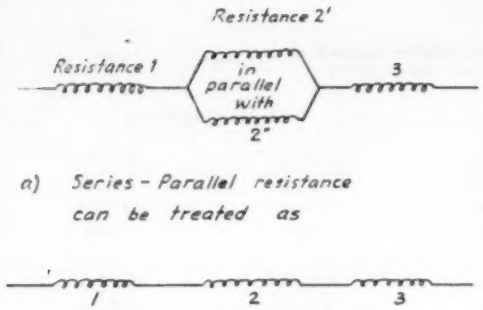


Fig. 13 Series-parallel resistances

The resistance of the parallel circuit R_2 can be obtained by substituting the proper values in equation (12):

$$\frac{1}{2} + \frac{1}{4} = \frac{1}{R_2} = \frac{3}{4}$$

Then $R_2 = \frac{4}{3}$ or 1.33 units.

The total resistance of the entire series-parallel circuit is then:

$$0.61 + 1.33 + 0.17 = 2.11 \text{ units}$$

If a temperature difference of 70 F existed across the entire resistance circuit, heat flow would then be 70/2.11, or 33.2 Btu per hr.

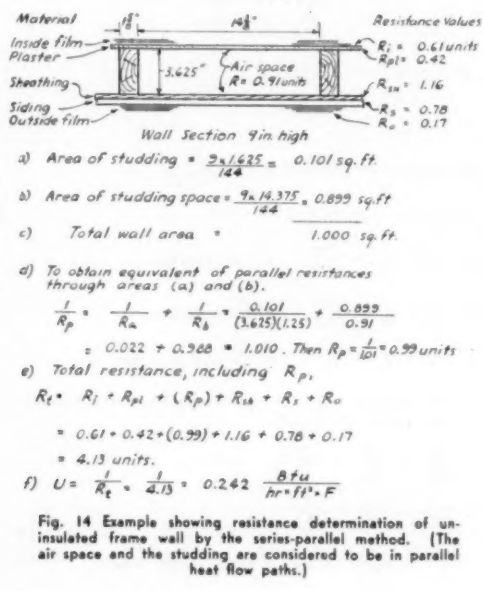

Material
Inside film
Plaster
Sheathing
Siding
Outside film
Resistance Values
Ri = 0.61 units
Rpl = 0.42
3.625"
Air space
R = 0.91 units
Rsh = 1.16
Rs = 0.78
Ro = 0.17
Wall Section 9 in. high
a) Area of studding = 9 x 1.625 / 144 = 0.101 sq. ft.
b) Area of studding space = 9 x 14.375 / 144 = 0.899 sq. ft
c) Total wall area = 1.000 sq. ft.
d) To obtain equivalent of parallel resistances through areas (a) and (b).
1/Rp = 1/Ra + 1/Rb = 0.101/(3.625)(1.25) + 0.899/0.91
= 0.022 + 0.988 = 1.010. Then Rp = 1/1.01 = 0.99 units
e) Total resistance, including Rp,
Rt = Ri + Rpl + (Rp) + Rsh + Rs + Ro
= 0.61 + 0.42 + (0.99) + 1.16 + 0.78 + 0.17
= 4.13 units.
f) U = 1/Rt = 1/4.13 = 0.242 Btu / hr·ft²·F

Fig. 14 Example showing resistance determination of uninsulated frame wall by the series-parallel method. (The air space and the studding are considered to be in parallel heat flow paths.)

Series-Parallel Resistances in Frame Wall Construction.

The most common case of a series-parallel resistance circuit occurs in a frame wall, as shown in Fig. 14. The resistances of the inside air film, 0.61, and the plaster, 0.42, are in series. So are the resistances for the sheathing 1.16, the wood siding, 0.78, and the outside air film, 0.17. The sum of these five resistances, all of which are in series, is 3.14 units. However, heat flow across the studding space can take place both through the wood framing and the air space. In other words, we have a simple parallel arrangement of two separate resistances. Without tracing all details of the calculations, which are presented in summary in Fig. 14, the conclusion is reached that total resistance for the entire wall as determined by the series-parallel method of calculation is 4.13 units, of which 0.99 units represent the equivalent resistance of the parallel circuit. In this example, if we had ignored the effect of the wood studding and assumed that the air space, 0.91 units, was the only resistance, total resistance would be 4.05 units. The difference in the two methods is only 2 per cent and is negligible. It should be noted that in this example resistance across the 1⅝ in. studding was materially higher than across the 14⅜ in. air space.

Consider next the case in which resistance across the studding is approximately equivalent to that across the studding space. This is illustrated in Fig. 15 in which the studding space is filled with 3⅝ in. thickness of fill insulation. The resistance of the entire wall is equal to 14.32 units by the series-parallel method and 16.55 units by the method in which the effect of the studding is ignored. In this example, the difference is 16 per cent and becomes more significant. Corrections of this nature are usually made in the published values of overall heat transfer coefficients of frame walls. Strictly speaking, the series-parallel method of calculation which is presented here involves some approximations and hence has some inherent errors. However, a strict mathematical analysis is far beyond the scope of these articles and will not be presented. The important thing to gather from this discussion is that when the resistance of the studding or the connector is the same or materially less than that of the studding space then the effect of the connector cannot be ignored. Such a case is presented next.

Effect of Metal Connectors in Series-Parallel Flow.

We have observed from Fig. 14 that when the resistance of the wood studding was large when compared with the air space, the error introduced by ignoring the resistance of the studding was negligible. Furthermore, in the example shown in Fig. 15, it was observed that when the resistance of the connecting studding was about the same as that of the air space, the error caused by neglecting the studding became appreciable.

Let us proceed one step further and illustrate a case in which a neglect of the resistance of the connector might prove serious. For this purpose, consider an imaginary wall of the type shown in Fig. 16, consisting

of two sheets of plywood bonded together with a metal connecting piece having a thickness of 0.1 in. The metal connectors are spaced 24 in. apart; the plywood skin surfaces are separated by a 2 in. space filled with wool insulation. At first glance, the wall appears to be a good one from a thermal resistance aspect because of the 2 in. insulation. The thin metal connectors do not appear to be appreciable heat conductors. A calculation of the total resistance of the wall by the series-parallel method shows however, that the value is only 2.985 units. Furthermore, if we had neglected the presence of the metal connectors and assumed that the resistance of the wall was only that through the insulated portion of the wall, the total resistance would be 9.12 units, or 3.05 times greater. In this example, the discrepancy of some 205 per cent cannot be ignored. Actually, as shown by R. M. Olson (*Thermal Short Circuits in a Metal Wall*, Tech. Paper 54, Univ. of Minn. Eng. Exp. Sta. 1946) the discrepancy would be less than 205 per cent, since some modifying factors have been ignored in the series-parallel method described in this article.

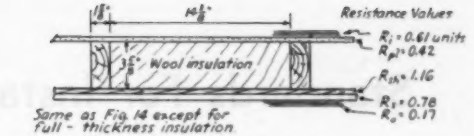
The fact remains however, that in a parallel circuit where the resistance through the connecting bar or studding is materially smaller than that through the bulk of the wall, the effect of the connectors cannot be ignored and the somewhat complicated series-parallel method will have to be used. An understanding of the principles mentioned here will serve to explain a number of conditions that are commonly observed in the field. For example:

a). In an uninsulated ceiling exposed to a cold attic, thermal resistance through the wood joists is greater than through the air space. The plaster surface between the joists will be colder than that directly below the joists. R. A. Nielsen (Dirt Patterns on Walls, ASHVE *Trans.* v. 46, 1941, p. 247) has shown that cold surfaces tend to collect dust. Therefore, the plaster below the joists will be lighter or cleaner than the plaster below the joist spaces.

b). In a well insulated ceiling exposed to a cold attic, resistance through the joists will be slightly less than through the insulated portion. A slight tendency will exist for the joist marks to appear darker than the adjacent wall surface.

c). Where metal extends continuously from an outside surface to an inside surface, as in hardware fixtures on doors and casement windows, the thermal resistance of the metal is so low that condensation will occur on inside surfaces on cold days. Nails punched through roof sheathing will frost or condense moisture in the cold attic spaces. Metal windows will create difficulties due to moisture and frost formation on the inside.

d). In a prefabricated wall section of the type shown in Fig. 16, the vulnerable point is the metal connector. Some method will have to be devised to break the path of heat flow and to offer more thermal resistance through the connector. Overall heat transfer coefficients of such walls that have not taken into account the parallel heat flow through the connectors have proven to be greatly in error.



Same as Fig. 14 except for full - thickness insulation.

Parts (a), (b) and (c) same as in Fig. 11

d) To obtain equivalent of parallel resistances through areas (a) and (b)

$$\frac{1}{R_p} = \frac{1}{R_a} + \frac{1}{R_b} = \frac{0.101}{(3.625)(1.25)} + \frac{0.899}{(3.625)(3.10)}$$

$$= 0.022 + 0.067 = 0.089$$

$$R_p = \frac{1}{0.089} = 11.18 \text{ units}$$

e) Total resistance, including R_p

$$R_t = R_i + R_{pl} + (R_p) + R_{ins} + R_s + R_o$$

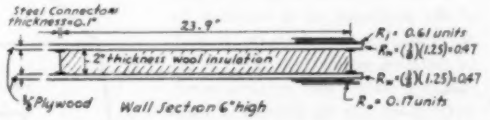
$$= 0.61 + 0.42 + 11.18 + 1.16 + 0.78 + 0.17$$

$$= 14.32 \text{ units}$$

f) $U = \frac{1}{R_t} = \frac{1}{14.32} = 0.070 \frac{Btu}{hr \cdot ft^2 \cdot F}$

Fig. 15 Example showing resistance determination of insulated frame wall by the series-parallel method. (The studding space and the studding are considered to be in parallel heat flow paths.)

The discussion in the preceding articles has led to some complications that may be beyond the range of some heating contractors. However, they are offered in the hope that when the necessity for solving a specific problem arises they may form a reference source which will aid in the solution. In the next article an extension of the resistance method will be given for the solution of surface temperatures of materials.



Wall Section 6" high

a) Area of steel connectors, $\frac{(0.1)(6)}{144} = 0.0042$ Sq. Ft.

b) Area of studding space = $\frac{(23.9)(6)}{144} = 0.9958$ Sq. Ft.

c) Total wall area = 1.000 Sq. Ft.

d) To obtain equivalent of parallel resistances through areas (a) and (b).

$$\frac{1}{R_p} = \frac{1}{R_a} + \frac{1}{R_b} = \frac{0.0042}{(2)(0.0032)} + \frac{0.9958}{(2)(3.70)}$$

$$= 0.656 + 0.134 = 0.790$$

Then $R_p = \frac{1}{0.790} = 1.265$ units

e) Total resistance including R_p,

$$R_t = R_i + R_w + (R_p) + R_w + R_o$$

$$= 0.61 + 0.47 + (1.265) + 0.47 + 0.17$$

$$= 2.985 \text{ units}$$

f) $U = \frac{1}{2.985} = 0.335 \frac{Btu}{hr \cdot ft^2 \cdot F}$

Fig. 16 Example showing resistance determination of wooden wall with metal connectors by the series-parallel method. (The air space and the metal connectors are considered to be in parallel heat flow paths.)

Standards For Installation Of Gas Piping And Gas Appliances In Buildings

PART IV

5.2 Draft Hoods

5.2.1 Draft Hoods

Every vented appliance, except incinerators, dual oven type combination ranges, and units designed for power burners or for forced venting, shall have a draft hood. If the draft hood is not a part of the appliance or supplied by the appliance manufacturer, it shall be supplied by the installer and in the absence of other instructions shall be the same size as the appliance flue collar. (For suggested general dimensions for such draft hoods, see Fig. 3, 4, and 5.)

5.2.2 Installation of Draft Hood

Where the draft hood is a part of the appliance or is supplied by the appliance manufacturer it shall be installed without alteration in accordance with the manufacturer's instructions. In the absence of manufacturer's instructions the draft hood shall be attached to the flue collar of the appliance or as near to the appliance as conditions permit. In no case shall a draft hood be installed in a false ceiling, in a different room, or in any manner that will permit a difference in pressure between the draft hood relief opening and the combustion air supply.

5.2.3 Position of Draft Hood

A draft hood shall be installed in the position for which it was designed with reference to the horizontal and vertical planes and shall be so located that the relief opening is not obstructed by any part of the appliance or adjacent construction.

5.2.4 Special Draft Hoods

Where the installer must supply a draft hood of special design, advice of the local gas company or the proper administrative authority as to its use should be secured.

5.3 Types of Flues or Vents

(*See Page* 98)

5.3.1 Type A Flues or Vents

Type A flues or vents shall be employed for venting:

a. All incinerators.

b. All appliances which may be converted readily to the use of solid or liquid fuels.

c. All boilers and warm air furnaces except where the proper administrative authorities approve the use of Type B gas flues or vents.

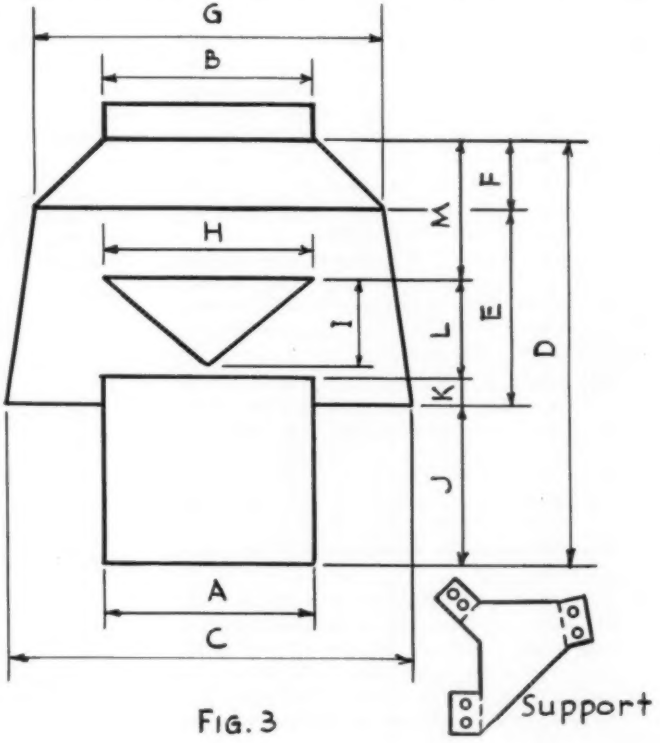


FIG. 3

5.3.2 Type B Gas Flues or Vents

Type B gas flues or vents shall be used only with approved gas appliances which produce flue gas temperature not in excess of 550 F at the outlet of the draft hood when burning gas at the manufacturer's normal input rating and not specified by 5.3.1 to be vented to Type A flues or vents.

For the purpose of this provision listed appliances with the exception of incinerators and converson burners may be accepted as producing flue gas temperatures not in excess of 550 F at the outlet of the draft hood.

5.3.3 Marking of Gas Flues or Vents Not Suitable for Other Fuels

Chimneys, flues or vents installed for use with gas appliances but which are not suitable for solid or liquid fuels, shall be plainly and permanently labeled:

"This flue is for use of gas burning appliances only." The label shall be attached to the wall or ceiling at a point near where the flue or vent connector enters the chimney, or, where a Type B gas flue or vent is used in place of a chimney, at a point near where the Type B gas flue or vent or the flue or vent connector enters the wall or ceiling.

5.3.4 Type C Gas Flues or Vents

Type C gas flues or vents shall be used only for runs directly from the space in which the appliance is located through the roof or exterior wall to the outer air. Such flues or vents shall not pass through any attic or concealed space nor through any floor. Installation with reference to clearance to combustible construction and pass through wall or roof shall comply with provisions of 5.4.7 and 5.4.8.

5.4 Flue or Vent Connectors

5.4.1 Materials

The material used for the flue or vent connector shall be resistant to corrosion and be of sufficient thickness to withstand damage. Where a question arises as to the suitability of a particular material, the proper administrative authority should be consulted.

TABLE OF DIMENSIONS (Fig. 3)
(In.)

A	B	C	D	E	F	G	H	I	J	K	L	M
3	3	5.5	7.0	3.8	0.7	4.4	3.0	1.5	2.5	0.7	1.5	2.3
4	4	7.2	9.5	5.0	1.0	6.0	4.0	2.0	3.5	1.0	2.0	3.0
5	5	9.4	10.8	5.3	1.5	8.0	5.0	2.3	4.0	0.9	2.4	3.5
6	6	11.5	12.0	5.6	1.9	9.8	6.0	2.5	4.5	0.8	2.7	4.0
7	7	13.5	13.9	6.4	2.3	11.6	7.0	2.9	5.3	0.9	3.1	4.6
8	8	15.5	15.8	7.1	2.7	13.4	8.0	3.2	6.0	1.0	3.5	5.3
9	9	17.5	17.5	7.7	3.1	15.2	9.0	3.5	6.7	1.0	4.0	5.8
10	10	19.7	18.8	7.9	3.6	17.2	10.0	3.8	7.3	1.0	4.3	6.2
11	11	22.2	20.7	8.4	4.3	19.6	11.0	4.1	8.0	1.5	4.6	6.6
12	12	24.7	22.2	8.7	5.0	22.0	12.0	4.4	8.5	1.7	5.0	7.0

Note: This is only one design of a vertical hood and should not be construed as the only design that may be used. A hood of any other design which will meet the American Standard Listing Requirements for Draft Hoods, Z21.12-1937 should be satisfactory within the limits of performance specified.

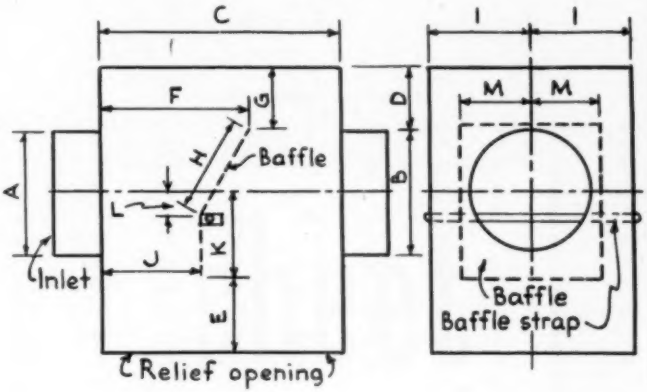


Fig. 4

TABLE OF DIMENSIONS (Fig. 4)
(In.)

A	B	C	D	E	F	G	H	I	J	K	L	M
3	3	6	1½	4¾	3¾	1⅜	2½	2½	2½	2⅛	5/16	1¾
4	4	8	2	4¾	5	1⅞	3⅜	3⅜	3⅜	2⅞	¾	2 5/16
5	5	10	2½	4¾	6¼	2⅜	4 5/16	4 5/16	4 5/16	3½	7/16	2 13/16
6	6	12	3	4¾	7½	2⅞	5	5	5	4¼	1⅛	3½
7	7	14	3½	4¾	8¾	3⅜	5⅞	5⅞	5⅞	5	1 5/16	4 1/16
8	8	16	4	4¾	10	3⅞	6 1/16	6 1/16	6 1/16	5⅝	1½	4 1/16
9	9	18	4½	4¾	11¼	4⅜	7½	7½	7½	6⅜	1 13/16	5¼
10	10	20	5	4¾	12½	4⅞	8⅜	8⅜	8⅜	7	1⅞	5 13/16
11	11	22	5½	4¾	13¾	5⅜	9 5/16	9 5/16	9 5/16	7¾	2 1/16	6⅜
12	12	24	6	4¾	15	5⅞	10	10	10	8½	2¼	7

Note: This is only one design for a horizontal hood and should not be construed as the only design that may be used. A hood of any other design which will meet the American Standard Listing Requirements for Draft Hoods, 221:12-1937 should be satisfactory within the limits of performance specified.

5.4.2 Avoid Bends

The flue or vent connector shall be installed so as to avoid short turns or other constructional features which would create excessive resistance to the flow of flue gases.

5.4.3 Pitch

The flue or vent connector shall maintain a pitch or rise from the appliance to the flue or vent. A rise as great as possible, at least ¼ in. to the foot (horizontal length) shall be

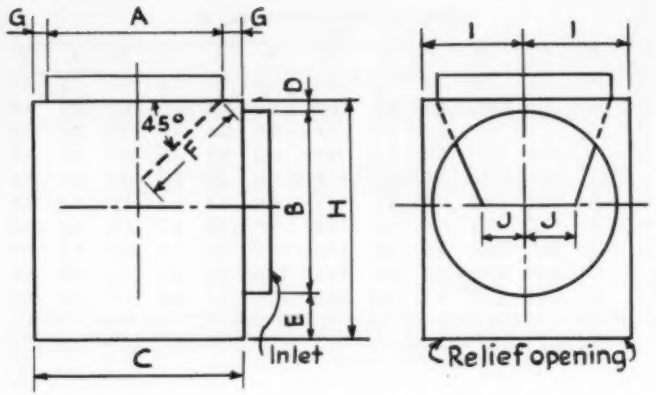


Fig. 5

TABLE OF DIMENSIONS
(In.)

A	B	C	D	E	F	G	H	I	J
3	3	4	1/2	3/4	2	1/2	4 1/4	2	5/8
4	4	5	1/2	1	2 11/16	1/2	5 1/2	2 1/2	1 3/8
5	5	6	1/2	1 1/4	3 5/16	1/2	6 3/4	3	1
6	6	7	1/2	1 1/2	4	1/2	8	3 1/2	1 3/16
7	7	8	1/2	1 3/4	4 11/16	1/2	9 1/4	4	1 3/8
8	8	9	1/2	2	5 5/16	1/2	10 1/2	4 1/2	1 5/16
9	9	10	1/2	2 1/4	6	1/2	11 3/4	5	1 3/4
10	10	11	1/2	2 1/2	6 11/16	1/2	13	5 1/2	1 13/16
11	11	12	1/2	2 3/4	7 5/16	1/2	14 1/4	6	2 1/8
12	12	13	1/2	3	8	1/2	15 1/2	6 1/2	2 5/16

Note: This is only one design of a horizontal to vertical hood and should not be construed as the only design that may be used. A hood of any other design which will meet the American Standard Listing Requirements for Draft Hoods, Z21.12-1937 should be satisfactory within the limits of performance specified.

TABLE 5

Flue or Vent Connector Clearances for Listed Appliances

Appliance	Minimum Distance from Combustible Construction	
	Metal Flue or Vent Connectors	Type B Flue or Vent Connectors
Warm Air Furnace	6 in.	1 in.*
Space Heater	6 in.	1 in.
Floor Furnace	9 in.	3 in.**

*Except as otherwise specified in the listing by a recognized testing agency.
**3 in. for a distance of not less than 3 ft. from outlet of the draft hood. Beyond 3 ft. the minimum clearance is 1 in.

maintained. The horizontal run shall be free from any dips or sags.

5.4.4 Provide Vertical Run

Wherever sufficient head-room is available, appliances having a horizontal flue outlet shall be provided with a vertical run of flue or vent connector before the horizontal run. To minimize frictional resistance in the connector, it is recommended that 45 deg elbows be used.

5.4.5. Length

The horizontal run of the connector shall be as short as possible and the appliance shall be located as near the flue or vent as practicable. The maximum length of horizontal run shall not exceed 75 per cent of the height of the flue or vent.

5.4.6 Support

Flue or vent connectors shall be securely supported.

5.4.7 Clearance

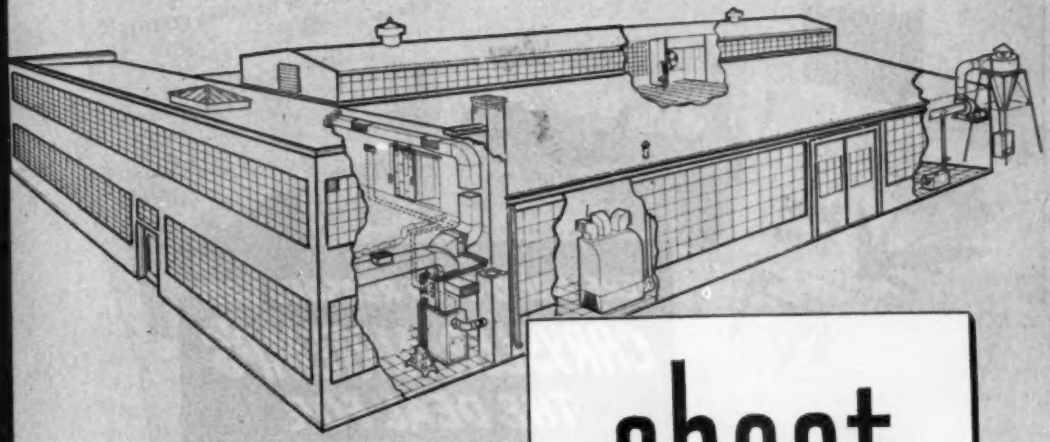
Flue or vent connectors shall be located in such a manner that continued operation of the appliance will not raise the temperature of surrounding combustible construction more than 90 F above normal room temperature when measured with mercury thermometers or conventional bead type thermocouples. Where flue or vent connectors pass through partitions of combustible construction, ventilated thimbles shall be used. Minimum clearances from combustible construction to flue or vent connectors for listed appliances are shown in Table 5. For unlisted appliances the minimum clearance shall be 9 in. from metal flue or vent connectors except for incinerators where the minimum clearance shall be 18 in.

AGA Definitions Of Flues And Vents

Type A Flue or Vent. Flues or vents of masonry, reinforced concrete, or metal smoke stacks.

Type B Gas Flue or Vent. Vent piping of noncombustible, corrosion-resistant material of sufficient thickness, cross-sectional area, and heat insulating quality to avoid excess temperature on adjacent combustible material and certified by a nationally recognized testing agency.

Type C Gas Flue or Vent. Flue or vent piping of sheet copper of not less than No. 24 U. S. Standard gauge or of galvanized steel of not less than No. 20 U. S. Standard gauge or of other approved corrosion-resistant material.



sheet metal Section

Design • fabrication • installation of sheet metal products

1—A NAME THAT'S KNOWN AND RESPECTED ALL OVER THE WORLD. **2**—PRODUCTS THAT LEAD THE FIELD IN DESIGN AND PERFORMANCE. **3**—NATIONAL ADVERTISING AND SALES PROMOTION PROGRAM. **4**—A COMPLETE LINE OF HEATING AND COOLING UNITS FOR EVERY SEASON. **5**—FACTORY-SUPERVISED TRAINING PROGRAM FOR SALES AND SERVICE PERSONNEL. **6**—BIG-VOLUME, MASS-PRODUCTION FACILITIES AND TECHNIQUES.

These are the reasons why wise dealers are signing up for Chrysler Airtemp franchises. They know that Chrysler Airtemp is *the line* for bigger volume and year-'round profit. Chrysler Airtemp products are easy to sell for every householder and businessman is aware of the sterling reputation of Chrysler Corporation. And Chrysler Airtemp salesmen are backed up by an intensive, hard-hitting advertising campaign in national magazines and newspapers. Then again, Chrysler Airtemp's line of products for heating, cooling and refrigeration means year-'round sales—no matter what season.

And Chrysler Airtemp offers experienced help in training dealers' sales and service teams. Add up these factors plus Chrysler Airtemp's big-volume production, which means prompt delivery on any item, and you see why more and more dealers are joining the Chrysler Airtemp team. There may be a franchise open in your neighborhood. Why not mail the coupon today for full details.

Airtemp Division of Chrysler Corporation AA-7-51
Dayton 1, Ohio

Please rush me complete information on the profitable Chrysler Airtemp dealer franchise.

Name_____

Address_____

City_____ Zone____ State_____

CHRYSLER AIRTEMP

Chrysler Airtemp

AIR CONDITIONING • HEATING • COMMERCIAL REFRIGERATION

Airtemp Division of Chrysler Corporation, Dayton 1, Ohio

Tooling For Sheet Metal Defense Production

ERNEST E. ZIDECK
Sheet Metal Consulting Engineer

TOOLING for production was a sore spot all through World War II. Millions upon millions of dollars were expended for jigs and fixtures which later proved inadequate or entirely wrong for the work for which they were designed. This was due mainly to inexperience of the planning engineers in sheet metal working and a similar lack in the men whose work it was to convert the plans to tool designs. These deficiencies in the technical personnel in the 1941-1945 effort are less glaring today, because the men have had opportunity to acquire knowledge and experience in those years, applying it to the new tasks presented to them today. While there have been noticeable changes in product designs, the basic principles in getting the product done by proper tools have remained the same.

The prime contractor's men plan and design the tools, subject to inspection and approval by representatives of the armed forces. Toolmaking is taxed to capacity in production for war or defense. Because very few prime contractors have the tooling capacity required in the emergency, most tools, especially the larger ones, the various jigs and fixtures, are subcontracted to outside machine shops. The engineering departments of prime contractors, having planned and designed the tools, not only for the particular local production and assemblies, but for the minutest part that must be produced (exclusive obviously of standard parts obtained from other manufacturers), insist that each part, even if produced in a subcontract, be made in identical tools, which would guarantee the fit of parts in assembly in the prime contractor's plant. The armed forces insist that parts must be interchangeable at the base or near the battlefield.

Tool Problems

This production of tools, although now better planned owing to wider experience of the engineers, remains a hazard nevertheless, because the machine shops work from blue prints representing something which has not been proven in actual use. Difficulties arise between the tool designers and tool makers, and between the engineers of the prime contractor and his subcontractors. The former discover details in the design which they, as practical men, deem unworkable. The latter, the subcontractors, after securing tools by the engineer's blue prints, discover that the tools do not work as expected.

Where the engineering and drafting departments are rushed, as happens in a war emergency, their work is often superficially inspected and released for production without the inevitable errors being discovered and remedied. These conditions necessitated the employment of an engineering force, often of individuals with slight or no knowledge or experience, traveling between the toolmaking shops and the parts makers, trying to smooth out the conflicts, eventually by having new designs of tools made.

The Wilson Plan

This inheritance from World War II conditions, with their delay of production by faulty tooling, squandering of engineering capacity in travels from place to place, and staggering costs has moved Charles E. Wilson, defense mobilization head, to advocate and partially introduce, concentration of all defense production in a few prime contractor's plants, including all tooling and parts making. Small business is fighting this arrangement. Under it, the small tooling shops in such areas as Detroit, would be idle during the emergency and go bankrupt. Sheet metal shops denied subcontract work might weather the reduced production for civilian market better, but some of them might be hurt nevertheless. Mr. Wilson's plan is undoubtedly in the interests of more efficient and less costly production. It might be realizable, but not right now, when defense items are wanted quickly and production delays can seriously affect the overall program.

Building additions to existing plants and equipping them for adequate toolmaking and parts production would delay real production by years. While the shops could be manned by workers for whom there is no longer work in the small shops, equipping the prime contractors' shops would be a real waste of millions of dollars in view of the fact that existing tool shops and shops able to make parts have the equipment, remaining idle. Then again, the new shops built and equipped and manned for making all tools needed in the defense production and all parts accessory to the production, could not operate satisfactorily for perhaps two years. It takes an auto

manufacturer five or more months to provide tooling for only slight changes in the car. Even then the more intricate jobs are let out to private shops where there is more concentrated knowledge and skill.

Plan Is Impractical

The plan for concentrated production in a few large plants must fail because it is impractical under the stress of demands by the armed forces, and authorities speeding rearmament in Europe and elsewhere. A jet plane calls for hundreds of separate parts which must be newly produced by the contractor himself. Each of these parts calls for instruments of production, if not dies for a stamping or hydro press then numbers of templates and jigs and fixtures for processing each single part. This tooling cannot be done from scratch, in the largest and best equipped and best manned shop, in less than a year's time from starting operations after the plant has been built. That also applies to parts making. And the designing-drafting-specifying work would obviously not improve by overburdening the personnel doing it.

Subcontractors Wanted

A score of aircraft and other prime contractors are already advertising for outside sheet metal shops to make parts. The shops desiring this subcontracting will be investigated and rated by men working for the prime contractor. Many of them might pass scrutiny and comply with requirements, being awarded a subcontract but that in itself is not the solution of their problem. No matter how much standard sheet metal equipment they have, this equipment can do only about one third of the work. Two thirds of the work must be done in special tools, among which predominate jigs and fixtures. Once these tools have been made accurately, the production is automatic, as the parts can only come out as the tool determines them.

Tools Important

Any parts production of this sort is a matter of tooling. If the special tools are made correctly production of the part in any quantity is smoothly forthcoming. Thus, the subcontractor in sheet metal parts accessory to defense products is primarily concerned with good tooling. He will be furnished with tool drawings by the engineering department of the prime contractor, but he must bear in mind that the tools so drafted (except in the second or third year of that particular production), have not been made and used in production. If he accepts the tool drafts as correct in every detail and orders the tools made for him he runs the risk of getting a tool inadequate for the work and delaying his deliveries of parts. His contract calls for speedy delivery of the specified parts; it says nothing about the tools he uses in making the parts. This is important, because if he delivers correct parts on time — his contract is fulfilled and he is in the clear.

To illustrate: during World War II a small firm, the Intercontinent Aircraft Company, with a sheet metal shop of about 15 men, secured a contract for making engine cowlings for the Navy Corsair. The overbusy tool engineers at Stratford, Conn., the location of one of the prime contractors, had furnished the subcontractor with blue prints for the forms, jigs, and fixtures for the parts of the cowling. Shipments received from this one subcontractor were so excellent in every detail, that the men assembling the plane wondered why similar cowlings made elsewhere, supposedly to identical drawings and in identical tools, were much inferior, often totally unfit for assembly. This writer was delegated to investigate. He went to Miami, where Intercontinent was located, and found there tools in use entirely different from, or at least greatly improved over, the tools specified in blue prints. In the other places he found tools in use as drafted and specified by the prime contractor's tool engineering department. The result was that the Intercontinent tools were adopted throughout.

The part determines the tool. The best known processes of making the part determine the tool. If the drafted part and specifications are examined, it is easy to visualize the processes by which the part can be made. Once these processess are determined it can be decided what tool would speed production. Then it is possible to compare the drafted tool with the one visualized. In many cases the drafted tool will be better than the visualization. In many cases it will prove a disappointment. In some cases the drafted tool will be completely inadequate for the work for which designed. What are we to do in the latter two cases? Engage in correspondence and controversy with the prime contractor, telling him that his tool is no good? If we do so, we might go on and on, months and months, before the chief engineer's assistant or someone in his department examines the drafted tool and does something about it. Meanwhile the shop cannot go ahead with production, missing deliveries and running into trouble.

Tools May be Wrong

While tool designers gained vast experience in World War II, even in sheet metal production, it is not at all sure that a particular tool will be designed and passed on by one of these experienced men. But even if it were, there are few sheet metal specialists among the engineers and designers, and the tool might still be inadequate for the work. Or, it might be a good tool, but so designed that it retards production. Inasmuch as the subcontractor experienced in sheet metal working will have only one single item or not many items to consider at one time, he can concentrate on producing it and determine what kind of tool would do the work best. If the drafted tool is found good, that ends the case. If it is examined closely as to its adequacy and found deficient, the best one can do in such a case is to correct the drafted tool or design an entirely new one.

Whichever tool is deemed best for the work it facilitates, that tool should be chosen, because in quantity production of parts the best tool saves time, money and trouble.

How To Prevent Heat Fatigue

W. SCHWEISHEIMER, M.D.
Rye, N.Y.

Every summer there are many man-hours lost due to heat fatigue and other ill effects of excessive heat. Roofing workers frequently lose time for this reason and some shops are unbearably hot during the summer. Here are some common-sense rules for working in hot weather.

"Is it warm enough for you?"

Many people spend every season of the year bemoaning either the chilliness of the day or the intolerable heat and humidity of a heat wave. Yet a few alterations in our daily habits would banish irritability, lethargy and fatigue, and we would bear in a happy mood the pecularities of hot summer days, even when combined with hot production processes.

Summer and Metal Heat Treating Operations

Excessive temperature conditions have long been considered hazardous to health and, therefore, a concern of industrial hygiene. The "effective temperature index" developed by Prof. C. P. Yaglous of Harvard University combines the influences of temperature, humidity and air motion. Recently a study of working conditions was made by Drs. J. B. Skinner and W. M. Pierce, Boston, in a number of plants where hot processes are employed during the summer months.

The new data include as the most important industries metal heat treating operations, lamp and radio tube manufacturing, plastic molding and textile dyeing. In all cases, heat production from the industrial operation was very great in comparison with the heat gain from sun rays. In most dry processes the effective temperature did not exceed the permissible limit of 86 F. In the case of wet processes, however, only in one out of twelve studies were conditions acceptable.

Of numerous methods suggested for combating high temperatures and their ill effects, ten have been considered useful by Skinner and Pierce. Here are some of the remarks made by the authors to those ten methods. 1) Salt tablets have come into use extensively. Most plants use dispensers located near the drinking fountains. Another method is salting of the drinking water with a 0.1 per cent solution. Another salting mechanism involves an electrically operated device for introducing a known amount of salt into a mixing tank.

2) To produce cooling air motion, circulating fans are in use. An air movement of 200 fpm will result in a drop of 1-2 F below the effective temperature of still air. In one of the plants, velocities as high as 500 fpm were employed without complaint by the workers. 3) An improvement is general exhaust ventilation. This is limited to a certain extent by the locality. For those localities having design effective temperatures of 84 F or lower, considerable reduction of the heat load can be effected.

4) Where the source of heat is concentrated over small areas, local exhaust hoods, properly insulated to prevent re-radiation, are the best possible method. 5) Instead of exhaust ventilation it is sometimes desirable to provide supply air. It may be taken from outdoors or it may be cooled by water sprays. It is convenient to install the supply air pipes along the ceiling of the workroom where they are in contact with the hottest air. When too much air must be introduced to the workroom in order to reduce the workers' exposure, the use of evaporating cooling systems will help when the humidity is low. When both exhaust and supply air equipment are used, it is sometimes erroneously believed that the ventilation rates of the two systems are additive.

6) For reduction of radiant heat suitable baffles can be installed betwen high temperature sources of heat and the workers. A common device is a series of chains placed in charging doors of furnaces. Radiation from furnaces, kilns, driers, etc. can be prevented by proper insulation. 7) Any enclosed humid process is to be preferred to an open one from a health standpoint.

8) Frequently a considerable amount of hot surface can be insulated. Insulation of ventilation ducts both for heating and cooling may be desirable. 9) Adjustment of the working hours to avoid the hotter part of the day has some merit. It is practice in a few plants to allow the men to go home at noon on days when the outside temperature rises much over 90 F. 10) In two cases, water was sprayed on the roof to minimize the effects of sun heat gain and to reduce the temperature of the air near the ceiling.

Recently studies have been made by Dr. John P. Marbarger, associate professor of physiology, University of Illinois, on the use of air-ventilated clothing in hot environment of 165 F, air ventilated the suit at a flow rate of 50 cfm and a temperature of 55 F. The results showed that the subjects were maintained in a safe physiologic

(*Please turn to page* 156)

Pattern Development For

Round Pipe Intersecting Taper At Given Angle

HUGH B. REID

IN PRESENTING pattern development problems, it often becomes necessary for reasons of clarity, to elaborate on the explanatory material, the drawing presentation, or both. The problem presented for consideration in this issue of AMERICAN ARTISAN comes under the second mentioned category. For practical purposes, the sheet metal pattern draftsman would eliminate the pattern for the hole cut-out and substitute two (2) location points, one on the intersection point of line *A* and the center line of the taper pattern; and the other on the intersection point of the taper center line and line *G* on the pipe. The intersecting pipe and the taper would be fabricated, with special attention being given to assure the location points being on the outside of the taper section when rolled. The intersecting pipe section could be placed in position and the hole marked for cutting or burning. This would eliminate the half end view, and a half front view resulting in the entire job being laid out from a half front view drawing.

The two (2) quarter circles representing the intersecting pipe can be located at any point on either side of the pipe intersection and the end of the taper, but the large radius must be on the same vertical line as the pipe radius as shown by *R1* and *HR* on the front view drawing marked simplified method.

This type of fitting is much more efficient than a tap into a round pipe because the tapered side will add to the air distribution on a ventilation system, and will offer less resistance in an exhaust system; factors to be considered in good design.

Solution to Problem

Following is a step by step solution to the problem. Draw the front view marked simplified method as follows:

a) Draw the horizontal center line of the taper.

b) Establish the line as indicated by the line marked *LD* (large diameter). This line is perpendicular to the horizontal line.

c) From line *LD* measure the length of the taper as indicated by the letters *LT* and draw the line *SD* which represents the small diameter of the taper. Through the points *R, S, T, U* draw the outline of the taper.

d) From line *LD* measure the distance *Y* establishing point *O* on the center line of the taper and from this point, draw a line at 45 deg to the taper center line. This line will be the center line of the intersecting cylindrical pipe.

e) From the intersection point of the cylinder and the taper marked *V*, measure the required length of the intersecting pipe and establish the point marked *W*. From *W* measure distance *R1* (radius 1) on both sides of the center line. This will establish the intersecting pipe diameter *YZ*.

f) From points *Y* and *Z*, draw lines *A* and *G* parallel to center line *O-W* and intersecting the side of the taper.

g) With point *W* as center and radius *R1* draw a half circle. Divide the half circle into six (6) equal spaces and through the points draw lines *B, C, D, E, F*, parallel to the center line.

h) Extend line *UR*. With *U* as center and *R1* as radius, draw a quarter circle and divide into three (3) equal spaces. From the intersection point of the taper center line, and the line *UR* draw a long arc as shown by radius *SR*. Through the three (3) equally spaced points on the *R1* arc, draw vertical lines to intersect the long arc *SR*. From the intersection points on the long arc, draw horizontal lines to intersect the line *UR*.

j) Through the intersection point of line *A* on the cylinder and line *TU* on the taper draw the line marked *H* parallel to line *LD*. With the intersecting point as center and *R1* as radius, draw a 90 deg arc and divide the arc into three (3) equal spaces. With the intersection point of line *H* and taper center line as center, draw the long arc *HR*. Through the equally spaced points on the *R1* arc, draw vertical lines to intersect the long arc *HR*. From the intersection points on the long arc, draw horizontal lines to intersect the line *H*.

k) From the intersection points on line *UR* and line *H* draw lines intersecting lines *A, B, C, D, E, F, G* on the cylinder. Through the points, draw the intersecting line of the cylinder and the taper as shown.

l) Through the intersection points, draw vertical lines to intersect lines *TU* and *SR* of the taper.

The half end view is constructed by the following steps:

a) Draw the center line. Establish the center point marked *RAD*, and the point for radius marked *R1*.

b) From point marked *RAD*, draw two half circles equal to the small and large diameters of the taper.

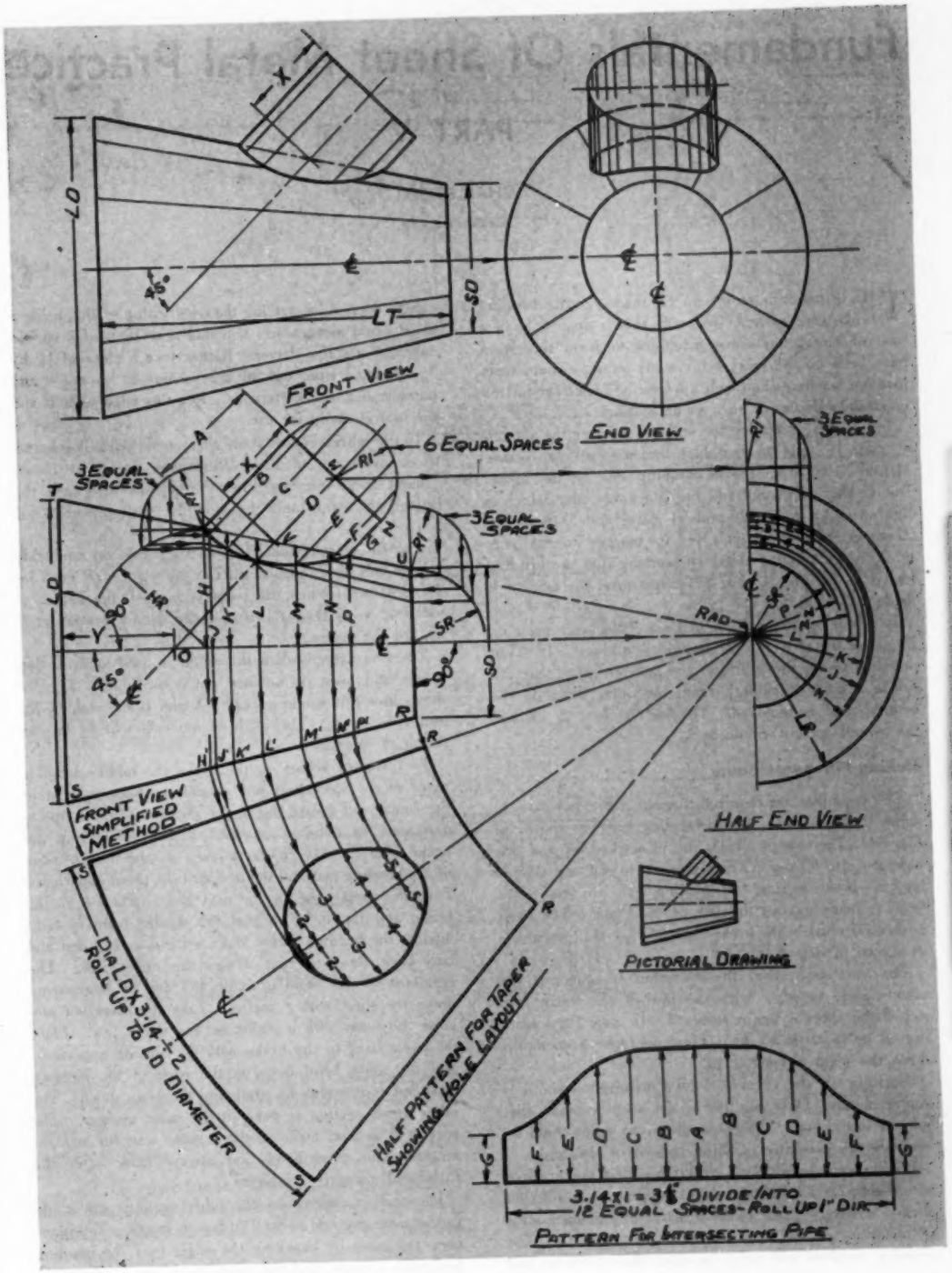
c) From the front view, measure radii marked *H, J, K, L, M, N, P* and draw long arcs as shown on the half end view.

d) Draw 90 deg arc marked *R1*, divided into three (3) equal spaces and through the points, draw lines to intersect radii arcs *H, J, K, L, M, N, P*.

To lay out the intersecting pipe, proceed as follows:

a) To find the required circumference for the stretchout, multiply the diameter by 3.14. Divide the stretch-

(*Continued on page* 166)


FRONT VIEW
END VIEW
6 EQUAL SPACES
3 EQUAL SPACES
HALF END VIEW
FRONT VIEW SIMPLIFIED METHOD
PICTORIAL DRAWING
DIA LD X 3.14 + 2 ROLL UP TO LD DIAMETER
HALF PATTERN FOR TAPER SHOWING HOLE LAYOUT
3.14 X 1 = 3 1/8" DIVIDE INTO 12 EQUAL SPACES - ROLL UP 1" DIA.
PATTERN FOR INTERSECTING PIPE

Fundamentals Of Sheet Metal Practice

PART V

CHARLES SEEL
Alexandria, Va.

THE Pittsburgh seam can be made on the bending brake very easily. Generally this is done only in a case of emergency since machines to form this seam have been on the market for many years. These seam forming machines find wide application in the production of straight ductwork on a volume basis.

Initial step in making the seam is to figure the amount of metal to add to the duct measurement for seams. Measure the width of the bending leaf on the brake. Double this width and add the knockover edge which is figured at 1/4 in. for 26 and 24 gauge and 5/16 in. for 22 gauge. The result is a 1 1/4 in. margin for the seam on 26 and 24 gauge metal (presuming that the bending leaf is 1/2 in. wide). For 22 gauge metal the margin is made 1 3/8 in.

It is not too difficult to make a Pittsburgh seam on 20 gauge metal if 1 1/2 in. margin is allowed. It is not practical to use this seam on any heavier gauge than 20. For a narrow Pittsburgh seam the outer band on the bending leaf is removed. The leaf is then 1/4 in. and the overall margin should be 3/4 in.

Making Pittsburgh Seam

The steps that are required to make a Pittsburgh seam using the full width of the bending leaf are shown in Fig. 34. The margin of 1 1/4 in. is marked off and this is bent up to 90 deg. The sheet is reversed and slipped into the brake against the bending leaf. In step 3 the bend is made against the jaw of the brake. The sheet is then clamped in the brake and the edge malleted down as shown in step 4.

The next steps cover the operation of squeezing the seam tightly together with the jaw of the brake. In step 6 the sheet is again reversed. In step 7 the seam is bent up to about 45 deg. Final operation is to mallet down the seam to level it off.

Marking off the sheet for the Pittsburgh seam is a simple matter. Only one line or dot need be made, that for the initial bend. In some shops the seam could be sunk on the grooving machine instead of the brake.

It has been the author's experience that the practice of opening up a Pittsburgh seam with an opener is not always necessary. Nor is the practice of placing a strip of metal in the slot necessary on straight work. The opening required will never be more than 1/16 in. and can be opened by striking the edge with a mallet, using a short rapid movement. If a tool is to be used it should never be a screw driver. Rather take a piece of 1/8 by 3/4 in. band iron, cut off the corners at an angle and hammer out to a knife edge. File this edge smooth and the tool is ready for use.

In the fabrication of some sheet metal parts it is sometimes necessary to make Pittsburgh seams at inconvenient locations. In Fig. 35 the end will have the Pittsburgh seams and the side the male members of 5/16 in.

The Pittsburgh seam at *A* in Fig. 36 is on an inside corner and need only be slit but the seam at *B* must be notched out. When the seam is formed, the slit at *A* will fold away from the corner and cannot overlap at *B* toward the inside.

There are times when this seam is used at a 90 deg corner and must be notched out accordingly. Fig. 37 shows how this would appear. A and B are each 1/2 in. and C is 3/4 in. The pitch of the cuts will be less as the angle decreases.

To form the seams on the brake the middle bend is made first. Since it is not possible to make a bend in the brake and crease the upper section at A the operation must be done in reverse. Place the sheet in the brake with the 1 1/4 in. mark even on the outside edge of the bending leaf and the inside of the piece uppermost. Turn the sheet over for the next bend. Place it in the brake and tap it in so that the square bend is tight against the bending leaf. Make a bend to 135 deg and curl back the part that strikes the upper jaw. The resultant 90 deg bend is made 135 deg by hammering down the sheet with a mallet. Take the sheet out and close the seam with a mallet on the upper jaw. Place the piece back in the brake with the outside uppermost and the inner bend even on the edge of the bending leaf, and countersink by malleting the seam down. The other inside section is done in the same manner. The part at *B* is next made in the regular way for straight seams. The cross bends are always made after the Pittsburgh seam is completed.

The male members on the other sections are made in the same manner as the Pittsburgh seams. The inner ones are made by knocking the edges over the bending leaf with a mallet and the outer bends are produced in

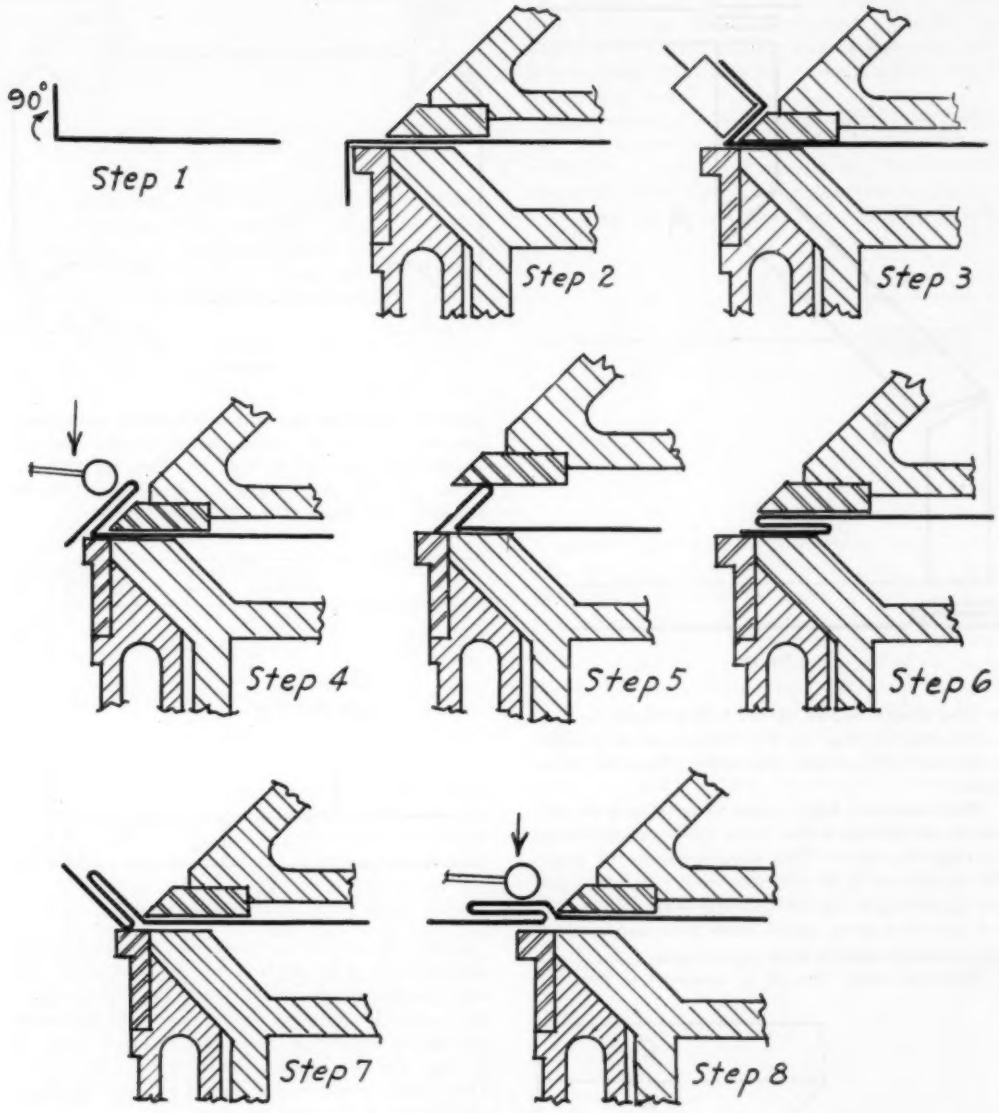


Fig. 34

conventional fashion. Since the bends are inside bends the sheet must be in the brake with the outside of the fitting up.

Mallet It Down

When the cross bends are made, the male member which will come between the clamping jaws, is always malleted flat before bending and brought back up again afterwards.

When large ducts are made they are sometimes paneled

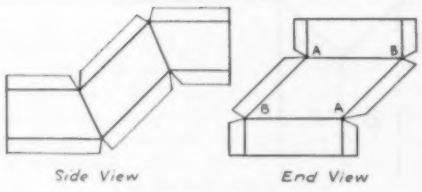


Fig. 35

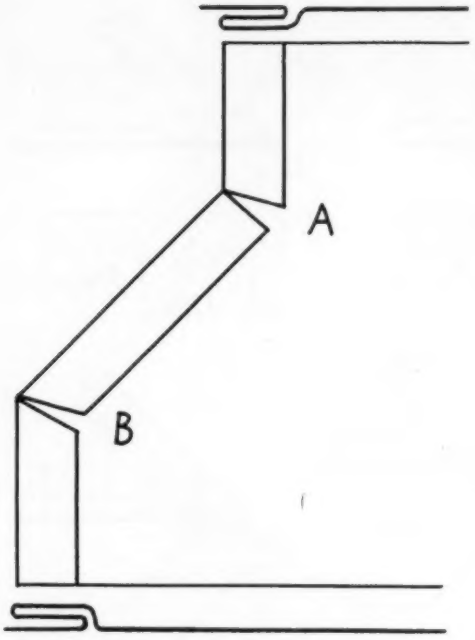


Fig. 36

or cross broken to add rigidity. These bends are generally about 15 deg. In Fig. 38 are shown a single cross brake and a double cross brake. These are inside bends.

Many mechanics keep a piece of metal at hand with cutouts of different widths to do away with measuring the edges for seams. This piece is usually 18 gauge. The cutouts are 3/16 and 5/16 in. for the male side and ¾ and 1¼ in. for the Pittsburgh seam. The author had several of these gauges made from stainless steel with markings ranging from ⅛ to 1½ in.

There are times when it is necessary to join two

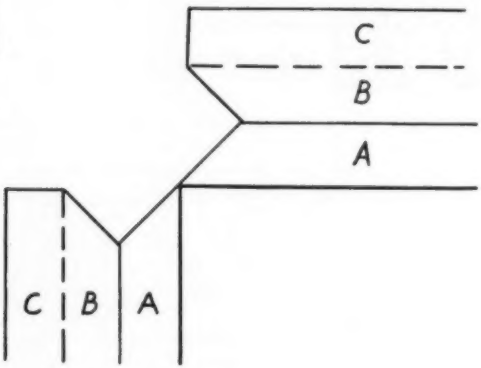


Fig. 37

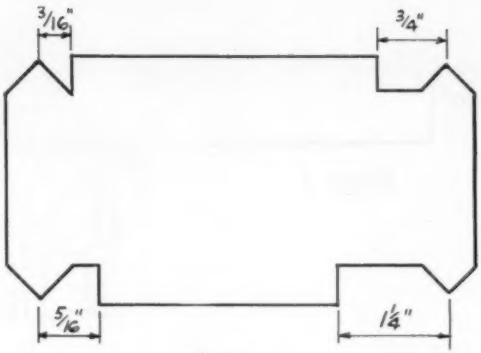


Fig. 38

pieces of metal together with a Pittsburgh seam along the edges. Since the pieces must not overlap they are notched out as shown in Fig. 39. Then the 5/16 in. edges are bent, one up and one down, and grooved together. The edges at *A* will meet.

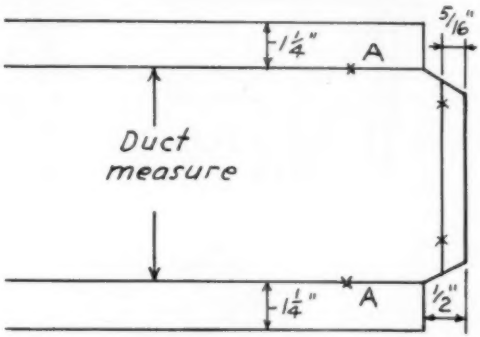


Fig. 39

In Fig. 40a is shown a corner seam consisting of two outside bends of 90 deg and two inside bends of 180 deg. Another corner seam, Fig. 40b, has slightly different bends. The cap piece has two inside 180 deg bends and the top and bottom pieces have an outside bend of 90 deg. Fig. 40c is quite similar to the other seams. These corner seams can be fastened by either punching and riveting or by using the clip punch.

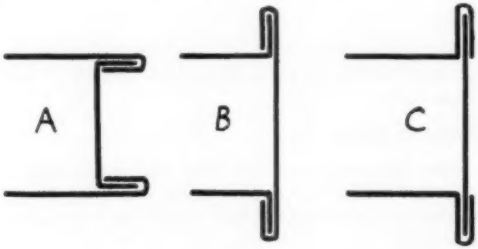


Fig. 40

Fig. 41

The corner seam in Fig. 41a is known as the double seam and consists of three members or edges. The width of each edge is 1/8 in. for 28 gauge; 3/16 in. for 26 gauge; 1/4 in. for 24 and 22 gauge and 5/16 in. for 20 gauge. It is not practical to double seam any heavier than 20 gauge.

The double edge is generally made slightly shorter than the single edge in order to make the knock down easier. Fig. 41b. Thus for a 1/8 in. edge the double edge will be 3/32 in.; for a 3/16 in. edge it will be 5/32 in.; for a 1/4 in., 7/32 in., etc.

In straight work the seam is placed on the top of the duct when appearance must be considered. Otherwise it is placed on any corner or corners, according to the width of the sheets used.

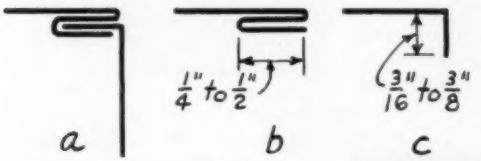


Fig. 42

The question of whether it is quicker to Pittsburgh or double seam a corner is a debatable one. On this seam the single edge is always an outside bend and made to 90 deg. The double edge is always an inside bend and is made to 180 deg. The two edges are hooked together and flattened tight by using the mallet and bar or rail. The blows with the mallet start at an angle and gradually bring the seam down to its closed position. It is not good practice to use a hammer for this operation because of the possibility of marring the work.

The next step is to back set or bring the seam tight together. This is where a hammer can be used, one place where it can be allowed. The job is placed on a stake or track and flattened out.

On ducts where it is not possible to reach the inside or if the appearance is not important this step can be omitted. The final operation, called squaring, is done by placing the work against a bar or stake and dressing the corner to a neat square angle. When the duct is long, this operation is performed while the work is still on the bar.

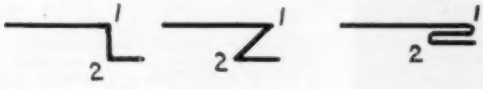


Fig. 43

It is possible, if care is taken, to make all the bends for a double seam on the brake in such a way that the seam can be slipped together and finished with very little malleting. The author has seen this done with 8 ft lengths of duct.

The single edge is bent to 180 deg and the double edge to the same angle, on the first bend making the width 1/4 in.; and then bent to 90 deg the same way making the width 5/16 in. The pieces are held in line and slipped together and the edge smoothed lightly with a mallet.

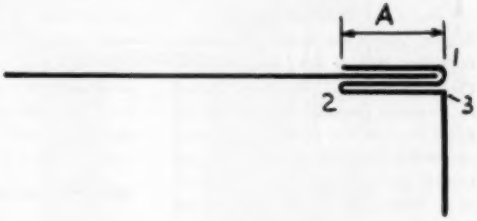


Fig. 44

Another corner seam is constructed as shown in Fig. 42a. It is also composed of three members. This seam when used for the corners of a box is called a banker's lock. It is merely a slip or pocket seam. The double edges are equal, Fig. 42b, and are generally made to conform to the width of the bending leaf of the brake, that is, 1/2 in. for large seams and 1/4 in. for small seams. The single edge is always made slightly smaller, 3/8 in. for the large seam and 3/16 in. for small.

The double edges are made as for a Pittsburgh seam. Bend *1* is made to 90 deg, bend 2 also to 90 deg. Fig. 43. Then each is bent to 135 deg and then squeezed in the brake to 180 deg. It should be noted that bend 1 is just the opposite of the Pittsbugh seam, being an inside bend. The single edge is also an inside bend to 90 deg. This seam is secured by rivets, metal screws, or solder.

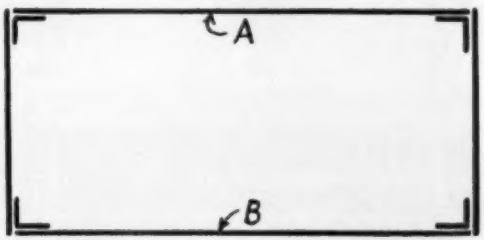


Fig. 45

Another corner seam is of the pocket type. One edge is raw, without bends. Fig. 44. The width of member *A* is generally 3/4 to 7/8 in. and is bent as follows: Make bends *1* and *2* as previously noted, both to 90 deg, to 135 deg and then to 180 deg. The first bend is inside and the second outside. Bend *3* is an inside bend to

(*Please turn to page* 168)

Efficient Planning Makes Sheet Metal Shop Profitable

LAWRENCE GICHNER
Washington, D.C.

THE Consolidated Air Conditioning Co., of Philadelphia, is a heating and sheet metal contracting company that is very conscious of the importance of efficiency. Alfred P. Ferraro, general manager of the firm, has always followed a policy of saving installation time in order to keep prices competitive and profit at a reasonable level. A recently installed scrap paper collecting system made for a large manufacturer of waxed milk containers provides a typical example. At an undetermined date in the future this system will have to be replaced due to normal wear. But it has been so designed that worn areas can be readily removed and in short order replaced with new parts at a minimum of time and expense. The system was planned with companion flanges and bolts in easily accessible sections, so that the whole repair operation 10 years or more hence is quite simple.

DESIGNED WHOLE SYSTEM

Called in as consultant Consolidated was given the problem of rapidly removing tons of waste paper that were piling up around machines. Production had to be stopped while it was cleared away in order to give workers room in which to function. Machines were shut down a half hour at a time. It took 15 minutes to remove paper scrap from the machines where it had jammed around the gears and messed up both the machine and dies.

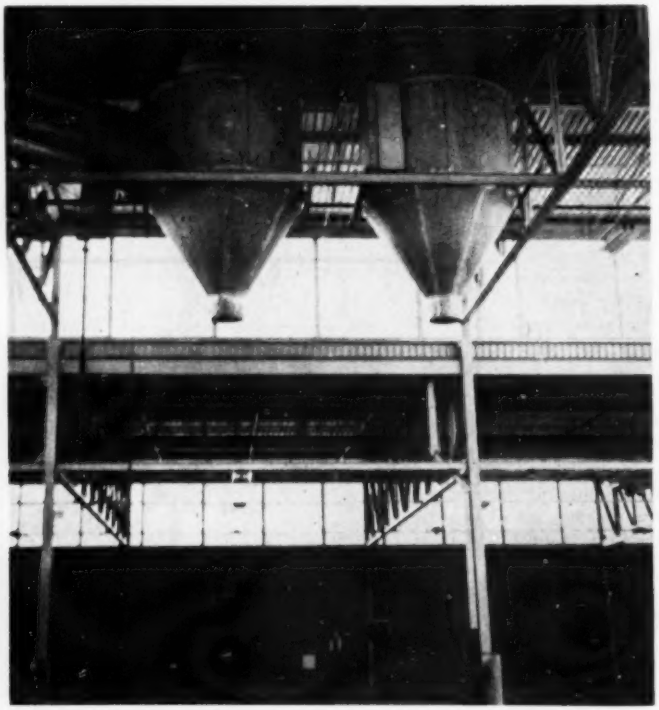
The newly designed system collects 98 per cent of the waste paper and shut downs are a thing of the past. Paper feeds in one end and comes out finished milk containers at the other end. Between beginning and end it is cut, folded, printed with colored inks, and waxed.

Formerly factories weren't too particular about appearances. Pipes were run out of windows and huge cyclones, bins and water towers were set about at will. Today, however, things are different and executives make sure that nothing disturbs the streamlined exterior of their plants.

Keeping the importance of a sleek exterior in mind, and in sympathy with the idea, Mr. Ferraro designed the cyclones to fit inside the building and utilize the usually unused area immediately under the ceiling. Thus no valuable space was occupied and expensive steel angle frame supports were completely eliminated by using roof support framing members to hold up the cyclones.

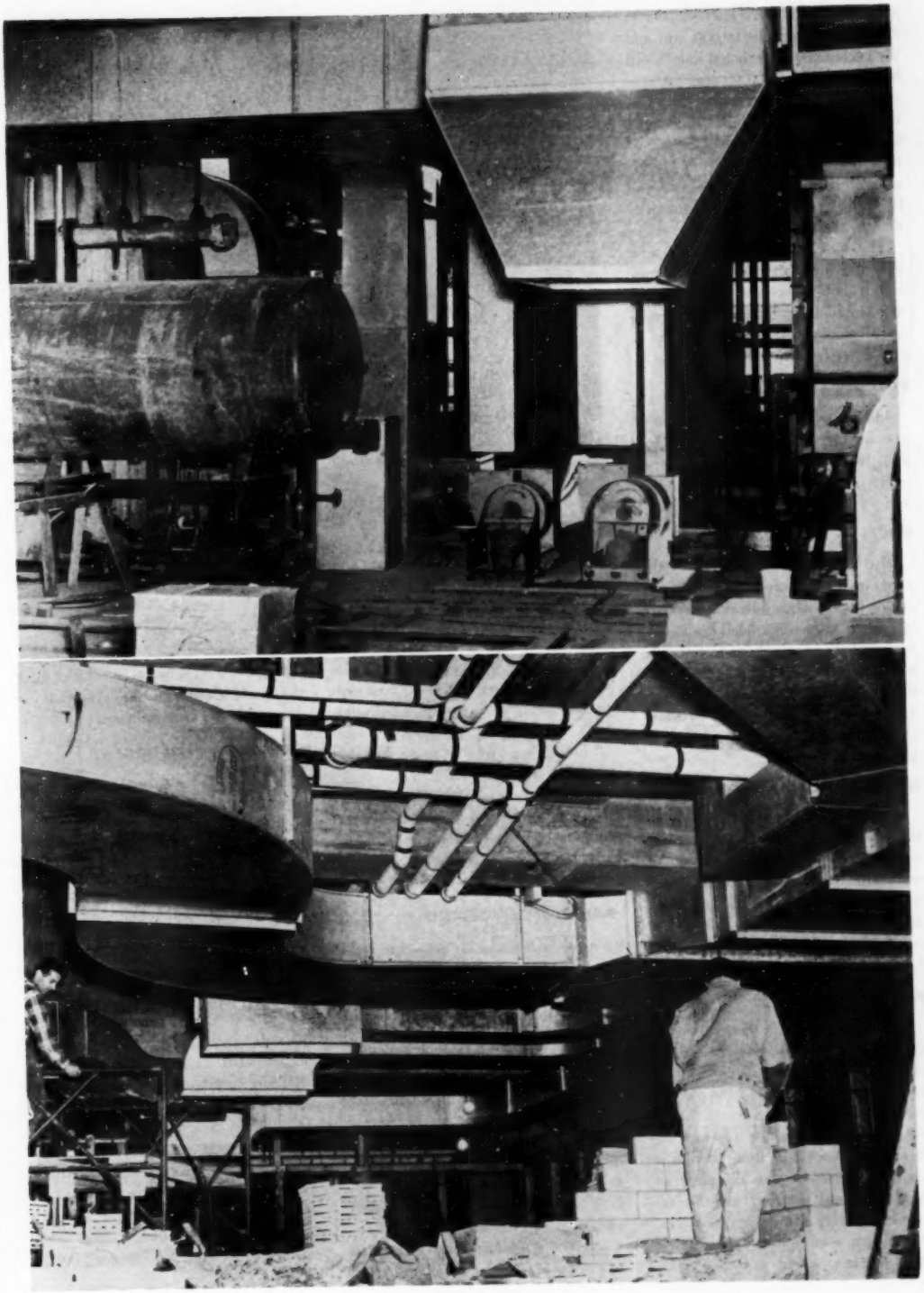
The straight body of this type of cyclone is 12 ft in diameter. Overall they are each over 25 ft high.

The scrap paper is picked up at the machines and carried to the cyclone with the aid of blowers. Three blowers feed into one cyclone, each



At the left are the cyclones hung from the roof in the installation described in the text.

Facing page: Above is a large exhaust job where the blowers have not been connected to the ductwork. Below is an example of the use of patented scaffolding to erect ductwork.



with separate lines. Each blower is capable of handling 10,000 cfm and the cyclone is so designed that it will handle a total of 30,000 cfm. A special partition at each of the three inlets inside the cyclone starts the heavy paper material toward the bottom and a tubular guard on the inside of the cyclone permits the air to escape to the outside through a duct to the roof.

The only thing on the roof is a rain cap over the duct. This rain cap is not immediately visible and one would have to look down from an airplane or travel a mile and a half away from the building to see it.

BINS STORE PAPER

Immediately below the cyclones are two large storage bins 14 ft high and 10 ft square. Here the scrap paper is stored. Later it is bailed and weighed.

DUCTS IN TRENCHES

The ducts that come from the paper machines are run in trenches on the floor. Thus no valuable space is wasted either overhead or underfoot. There are no ducts to interfere with overhead workings. All the ducts were fabricated of 20 gauge galvanized steel sheets. The cyclones and bins were made entirely of 16 gauge steel.

NO VIBRATION TRANSMITTED

Where the system exhausts through the roof, it does not come in contact with the deck and no vibration is transmitted. This is accomplished by a breather collar and though an opening is necessary, no rain comes in due to a protecting overhanging hood.

PAPER ABRASIVE

Those who have cut themselves can attest to the razor edge sharpness of paper. Miles and miles of paper passing over the inside of the collecting system during the years wears the metal thin and in places cuts through. Knowing that this will occur, the system was designed so that worn out sections can be replaced quickly and inexpensively. To replace even bulky parts of the huge cyclone would not take very long. The tapered bottom is attached to the straight side of the cylinder with companion angle flanges. Only 30 bolts have to be removed and the two sections are separated.

Drafting department in action.

The entire system was first laid out on the drawing board where flaws were ironed out and most modern innovations included before a single sheet of steel was cut.

PATENT SCAFFOLDING

As an aid to speedy jobs, Mr. Ferraro is a great believer in the value of the patent scaffolding. In a square duct job he did for the Lower Merion cafeteria, Lower Merion Township, Philadelphia, he used it to excellent advantage both on inside and outside erection. In addition to being light and therefore easily moved it is also sturdy and safe with the advantage of allowing ample space to move about.

Where a large kitchen exhaust duct ran across a roof and up the side of a wall the scaffolding was assembled five and six sections high. It allowed the mechanics to assemble the bulky duct with the utmost ease.

GREASE DRIP IMPORTANT INNOVATION

A valuable feature, worthy of note, was constructed in the duct at the elbow at the junction of the roof and the wall. Here a dip was made in the bottom of the duct just before it began to rise up the wall. This dip serves as a grease trap. An access door is installed at the duct right at this area. In the bottom of the dip a 2 in. coupling and valve are installed. By placing a bucket under the valve and opening the spigot the accumulated grease is drained off resulting in greater efficiency for the system and lessening of the fire hazard. Many a ventilating contractor can apply this valuable idea. Not only does fire destroy property but lives as well. A great percentage of restaurant fires begin right at the kitchen hood and like a flash are carried through the grease lined hoods.

we're up to our necks in a paradox!

Prior to the introduction of M-12 and Amendments we urged you to use Revere Sheet, Strip and Roll Copper for roofs, flashings, gutters and downspouts. Now with copper cut to a limited number of uses, as well as being in short supply, we will be unable to furnish the quantities you want or as fast as you would like. However, we still want to plug the merits of Revere Copper, so that once it is again available in the desired quantities, you will again use it. A paradoxical situation.

But paradox or no, we can still be of help to you with problems which present conditions will create. Actually, the limitations on Revere Copper will probably result in an increase of activities on the part of Revere's Technical Advisory Service. Revere will be only too glad to work with you on your problems; give you the benefit of its knowledge gained from a century and a half of working with metals.

And don't forget, while supplies are limited, you can still use Revere Sheet, Strip and Roll Copper for most flashing applications.

For through-wall applications ask the Revere Distributor about Revere Keystone Thru-Wall Flashing*. He also will advise you of the availability of materials and put you in touch with Revere's Technical Advisory Service in the event you wish to discuss your technical problems.

*Patented

REVERE 150TH YEAR OF SERVICE TO AMERICA

COPPER AND BRASS INCORPORATED

Founded by Paul Revere in 1801

230 Park Avenue, New York 17, N. Y.

• • •

Mills: Baltimore, Md.; Chicago and Clinton, Ill.; Detroit, Mich.; Los Angeles and Riverside, Calif.; New Bedford, Mass.; Rome, N. Y.—Sales Offices in Principal Cities, Distributors Everywhere.

SEE "MEET THE PRESS" ON NBC TELEVISION EVERY SUNDAY

...a complete, up-to-date source of product information

RIGHT AT YOUR FINGERTIPS!

....the JANUARY DIRECTORY ISSUE of AMERICAN ARTISAN

READ WHAT OTHER DEALERS, CONTRACTORS AND WHOLESALERS HAVE TO SAY

"This Directory is very helpful in locating equipment foreign to us from our regular supplies."
Contractor, Toledo

"We use your Directory an unlimited number of times both listing and advertising sections."
Contractor, Fort Worth

"A fine Directory and very useful. We refer to both listings and ads many times during the course of the year."
Dealer, Sioux City, Iowa

"A very good reference book. It is used in our office at least three times a week."
Wholesaler, Canton, Ohio

"Many times during the year we refer to your January buyers' guide. Advertising pages are particularly helpful."
Wholesaler, Little Rock, Ark.

"When we need product information we refer to your Directory. The ads are useful in giving us more complete data."
Dealer, Springfield, Mass.

"We find the advertising as valuable as the listings. The book is used here at least five times per month."
Contractor, York, Pa.

"On the average of twice a week we consult your January Directory. We keep it handy until the next edition reaches us."
Wholesaler, Fort Wayne, Ind.

The time you spend in looking up sources of supply for the products you need for your jobs is money spent . . . just the same as though you dipped into your pocket and paid it out. One dependable way to find what you are looking for in a hurry is to keep the January Directory issue of AMERICAN ARTISAN constantly available for ready reference. You'll find an accurate and up-to-date listing of products alphabetically arranged, along with their identifying trade names and company addresses in the yellow section of this complete buying guide.

Furnaces, humidifiers, blowers, instruments and controls, dust collectors, registers and grilles, etc., etc., are listed and the manufacturers who advertise in this issue are prominently identified in the event you might want to refer to their advertisements for more information.

Keep it right at your elbow . . . when you need any item connected with warm air heating, residential air conditioning or sheet metal contracting, make it a habit to pick up the January Directory issue and easily find who makes it and where they're located.

AMERICAN ARTISAN
6 North Michigan Avenue
Chicago 2, Illinois

Chicago Golf Group Opens Season

THE CHICAGO WARM AIR GOLF Association played the first of its four 1951 tournaments on June 19 at Rolling Green Country Club. This group is composed of dealers, wholesalers, and manufacturers in the warm air heating and sheet metal business in the Chicago area and is anxious to have members of the industry join with it in these golf get-togethers. The next event is scheduled for July 19 at Brookwood Country Club. Mel Jackson of Grant Wilson, Inc., heads the group.

At Rolling Green, Bob Lorenz, Chicago Furnace Supply Co., shot a 74 for low gross honors. First low net was Frank Eiselt, Cicero Sheet Metal Co., and he was followed to the prize table by Mel Jackson, Lars Schulein, Barney Wittman, Jack Stowell, G. G. Fohey, B. A. Johnson, and Walt Aschliman.

Blind Bogey winners were George Kalvog, James Gats, Laury Walquist, Frank Sirovatka, J. Burch, and H. A. Ziehm. The high score of the day won a prize for John Gats. A total of 43 played golf and 5 non-golfers joined the group for dinner.

Rochester

GEORGE BALLARD, SR., was installed as president of the Master Sheet Metal Furnace and Roofers Association of Rochester, N. Y., at a dinner meeting in the Country Club at Ontario.

Other officers installed were: Vice president, Charles Schmidt; treasurer, Orville Brandt; secretary, Richard W. Friday, and chairman of the board, Minty Childs.

MSA Tournament

THE ANNUAL GOLF tournament and summer outing of the Midwest Stoker Association will be held at the Mt. Prospect Country Club, Mt. Prospect, Ill., on Friday, July 27, 1951, President P. I. Bohmann has announced. Arrangements for this traditional event are in charge of the association's entertainment committee headed by H. E. Honey of the Brunswick Electric Co.

Fox Valley

THE 17TH ANNUAL FIELD DAY of the Fox Valley Furnace & Sheet Metal Contractors association will be held at St. Andrews Country Club on Wednesday, July 25. The club is located on Route 59 just north of Route 64.

Golf, horseshoes, and other sporting events will occupy the afternoon with a dinner scheduled for the evening.

The Fox Valley association feels that social events of this kind contribute to a better understanding between branches of the industry and help solve mutual problems.

Los Angeles

THE REGULAR MEETING of the Institute of Gas Heating Industries was held on Wednesday, May 16, 1951 at Nikabob Restaurant, President Haldeman presiding. The chair called for and received approval of the minutes of the last meeting as published.

R. E. Harkens introduced five new members: Hayne Heating Service of Pasadena; Acme Htg. & Air Conditioning Co., Los Angeles; Lynch Asbestos Co., Los Angeles; Robert H. Clark Co., Huntington Park; Sequoia Mfg. Co., San Carlos, California.

Contractors section report by Gordon Payne, chairman, announced the next contractors meeting date and the agenda included 1) Items before the state legislature, 2) State Licensing examination, 3) Supplemental licensing and other matters pertaining to C-20 classifications. Mr. Payne urged all contractors to return the questionnaire recently mailed them, and that they be present at the next meeting.

Finance committee report, by Leo Hungerford, covered the committee's concern over the finances and ex-

COMING EVENTS

Oct. 15-17—American Gas Association, 33rd annual Convention, Kiel Auditorium, St. Louis, Mo. American Gas Association, 420 Lexington Ave., New York 17, N. Y.

Nov. 5-8—7th All-Industry Refrigeration and Air Conditioning Exposition, Navy Pier, Chicago, Ill. Sponsored by Refrigeration Equipment Manufacturers Association. George E. Mills, Show Director, 1346 Connecticut Ave. N. W., Washington, D. C.

Dec. 3-4—National Heating Wholesalers' Association. Annual Meeting, Hotel Statler, Cleveland, Ohio. E. L. Wyman, Executive Secretary, 609 Commerce Building, Cleveland.

Dec. 5-6—National Warm Air Heating and Air Conditioning Association, 38th Annual Convention, Hotel Cleveland, Cleveland, Ohio. George Boeddener, Managing Director, 145 Public Square, Cleveland.

penses of the Institute, and its recently completed workable plan, having been submitted to the board, had been approved, and was presented to the membership. Mr. Hungerford gave a summary breakdown of Institute expenses comparing the present income and the proposed income with current expenses.

The chair praised the work done by the Sales Training & Engineering committee in conducting the 1951 school and introduced the members of the committee. The chairman, Reggie Hesling, was called upon and he commented on the 1951 course and introduced the sponsors.

Presentation of diplomas to the graduating class of the 1951 school of Sales Training & Engineering by Ray Bridges, past president, after some well chosen words of commendation for their efforts and accomplishments. Fifty-one men received framed Certificates of Achievement.

The meeting was then turned back to the chairman of the meeting who presented Reggie Hesling with his Certificate of Achievement.

Aluminum Association Meets

Among Important Matters receiving attention at the Aluminum Association's summer meeting held June 6-8 at White Sulphur Springs, W. Va., according to Donald M. White, association secretary, was the tentative approval of standard nomenclature for aluminum sheet and extruded products. Final approval of these items is expected in the near future.

Progress of the current expansion program and operating procedures under the Controlled Materials Plan were among other industry problems discussed. A. P. Cochran of Louisville, president of the association, presided and the meeting included separate sessions by the Association's foundry, sheet, extruded products, and foil divisions.

Exemplifying the association's effort to cooperate with governmental bodies in solving problems of supply, the group had as its principal invited guest, Nigel H. Bell, director, Aluminum and Magnesium Division, National Production Authority.

Old Timers' Hold Jamboree

The Old Timers' Club of the oil burner industry held a jamboree at the Furniture Club in Chicago in April. This group is made up of men who have been actively association with the oil burner industry for 15 years.

As indicated in the photo a goodly group of initiates were on hand to join the club. J. W. Owens was re-elected national chairman of the club. Attendance at the jamboree was 282.

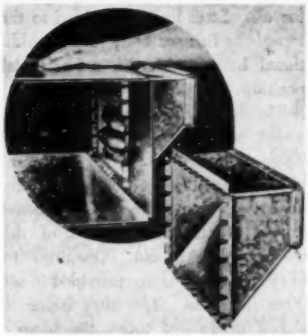
Left to right: W. A. Matheson; J. C. Johnson; E. N. McDonnell; L. L. Jacobs; Geo. Hochstein; R. E. Bohn.

C. H. Chalmers, Ed. Bailey, J. W. Owens, W. A. Matheson (toastmaster).

Bob Walshin, J. W. Owens (re-elected chairman), and Fred Haab.

The new initiates.

EQUIPMENT DEVELOPMENTS



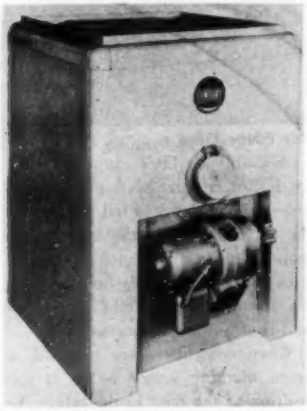
Pre-Notched Collars 77

Pre-notched edges on collars of galvanized warm air heating and ventilating fittings are easily closed with finger pressure.

Notches are die cut in a U shape to provide maximum strength and rounded corners protect installer from injury to fingers.

Designed to save time on the job by eliminating the need for notching on the job, straightening with pliers, and hammering in a cramped space.

Adelta Mfg. Co., Inc., Philadelphia, Pa.



Oil-Gas Gravity Furnace . . . 78

Furnished in capacities of 75,000, 85,000, and 105,000 Btu at the bonnet, this oil fired gravity furnace is designed for the small to medium sized home or as replacement units.

Features a crescent furnace design and is fired with either the Century Model L or Model O gun type oil burner. Removable oil burner and combustion chamber assembly mounted on one plate for easy changeover from oil to gas.

Century Engineering Corp., Cedar Rapids, Ia.

Gas Utility Furnace 79

Gas fired utility furnace rated 100,000 Btu input and 80,000 Btu at bonnet is adaptable to many types of installations. Equipped with a fixed orifice, ventura tubular design burner which reproduces a semi-luminous, full floating convex flame.

All parts, including casing, are die stamped from heavy gauge deep draw steel. A one piece electronically welded combustible chamber eliminates the possibility of gas leaks.

Height 58¾ in. permits installation in basements and floor area 22 in. by 25 in. makes it practical also for utility room closet, and other confined applications.

Shipped completely factory assembled.

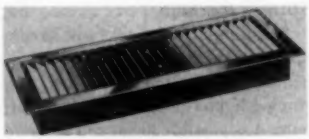
Morrison Steel Products, Inc., Buffalo, N.Y.

Solder Restores Galvanizing . 80

Solder for use in restoring damaged galvanizing where destroyed by welding. This solder will stand 800 hours salt spray bath without deterioration and shows no line of demarcation between it and hot dip, but makes a homogenous coat.

Has a melting pont 17 F higher than 50/50 solder and a high degree of fluidity. May be applied with torch or soldering iron.

Farrelloy Company, Philadelphia, Pa.



Perimeter Heating Register . 81

Long narrow register with adjustable fins puts warm air where it is needed. This diffuser discharges air in a flat pattern that blankets picture windows and cold outside walls, pre-

MAIL THIS NOW!

We will ask the manufacturer to send full particulars about the products and literature mentioned.

Be sure to circle the items you want. 7-51

Equipment Developments

77 78 79 80 81 82 83 84
85 86

New Literature

265 266 267 268 269 270 271 272
273 274 275 276

Manufacturer ☐ Jobber ☐ Dealer ☐

Name .....

Company .....

Address .....

Address: AMERICAN ARTISAN, 6 North Michigan Ave., Chicago 2, Illinois

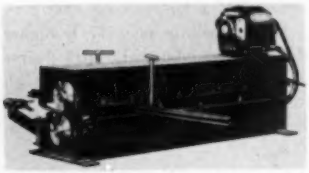
EQUIPMENT DEVELOPMENTS

(*Use Coupon on Page* 117)

venting cold drafts from sweeping across a room. Developed especially for installation in the floor and specifically meets the needs of perimeter systems, but also adaptable for use under stairs, in kitchen cabinets, on the high sidewall, etc.

Vanes can be adjusted for any desired air distribution pattern. Available in oak and metallic finishes. Sizes: 4x10, 4x12, 4x14, 2¼x14.

Air Control Products, Inc., Coopersville, Mich.

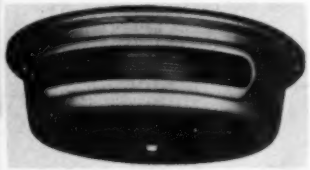


Slitting Machine 82

A slitting machine that will handle up to 16 or 20 gauge mild steel depending on the model selected. In ripping lighter gauges such as aluminum, it is possible to cut two or more sheets at a time.

Has 27 in. throat depth permitting cut to the center of a four ft. sheet of any length. Can be used on site of big construction jobs, cuts labor costs, and doubles shop output.

Wilder Mfg. Co., Monterey, Calif.



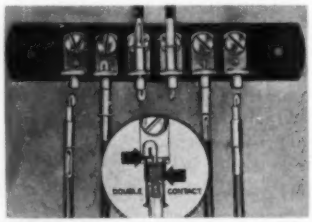
High Velocity Diffuser 83

This diffuser handles air at high pressures and velocities permitting use of small, exposed ducts of uniform size. High induction air mixing results in draftless distribution and permits greater temperature differentials between supply and room air.

Handles air up to 3000 fpm, velocity, 2 in. static pressure in ducts, and supply air at 25 F less than room air. Decibel rating at this pressure is 50. Unit may be adjusted by externally operated sleeve damper to discharge any air volume between 90 and 180 cfm without altering diffusion pattern, or may be completely shut off.

Recommended where a small air volume is required to provide the cooling effect of a greater volume at a higher temperature.

W. B. Conner Engr. Corp., New York, N.Y.

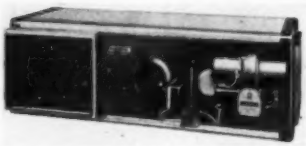


Interlocking Connectors . . . 84

Interlocking connectors, plugs, and outlets are self-locking, vibration proof, crackle free, and not subject to aging or contact fatigue. Suitable for all wiring connections and terminal strips. Fast, automatic action represents considerable saving and convenience in wiring and assembly time and makes servicing and testing faster and more reliable. Straight insertion locks the plug securely in its outlet. No other operation, screw, clip, or tool is needed. The contact parts themselves form the lock. Contact is both frictional and knife-edge, under constant coilspring tension.

Removal is just as easy. A slight pull on the flanged sleeve releases the locking mechanism in one operation. Data sheets, test reports, and samples are available to readers upon request.

Harvey Hubbell, Inc., Bridgeport, Conn.



Horizontal Oil Unit 85

An oil fired horizontal winter air conditioning furnace, rated 80,000 Btu output, is equipped with a new burner which combines air control and turbulation for low gallonage efficiency.

The heat exchanger is welded steel, incorporates a wrap around radiator, and is designed specifically for oil. Steel fins are welded to the top of the furnace body to gain additional heat transfer in a horizontal position.

The furnace is shipped in a crate which will pass through standard doors and only the burner and combustion chamber need be installed by dealer. Return air may be connected to the front, rear, or end of the blower compartment. Openings to fit the filter frame are provided in all three locations. The filter frame is placed in any of these, the blower compartment access door in another, and a steel panel in the third.

Four eye bolts are provided for suspended installation; levelling screws are located at the bottom of the cabinet for use in non-suspended installations.

Armstrong Furnace Company, Columbus, Ohio

Air Filter Gauge 86

A visible air filter gauge for automatic forced air heating units enables a homeowner to tell at a glance the condition of the filters. Is mounted on a side panel of the furnace with a flexible plastic tube leading from it, through the filter, and into the blower compartment.

When new filters are installed, a green marking arrow is set at the position of the float in the tube. As the filters become clogged the float rises in the tube. When it reaches the red arrow it is time to change filters. Simple and foolproof and may be installed as an accessory on all furnaces.

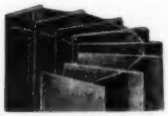
Heil Co., Milwaukee, Wis.

THIS *Line* helps sell **YOU!**

VICTOR "FIN" RADIATION FURNACES FOR
GAS • OIL • COAL • COKE • DUAL FUEL
HI-BOYS • LOW BOYS • FORCED AIR AND GRAVITY

NEARLY 100 MODELS AND SIZES

The famous line of VICTOR furnaces will not only make your sales easier . . . it will also help establish you as your community's leading heating equipment dealer. As an exclusive VICTOR dealer your sales are made still easier by VICTOR'S free engineering service; and proved sales, merchandising and advertising aids. This QUALITY line . . . famous as a leader since 1890, is a line engineered and built for easier installation, for a lifetime of service-free satisfaction . . . a versatile, fast selling line priced to sell.



Remember!
IT'S THE FURNACE WITH THE HEAT RADIATING
-FINS-

Investigate **VICTOR**
WRITE US TODAY!
Put the burden of proof up to us.
Investigate the VICTOR line . . . the VICTOR franchise. We will add only a few new accounts this year.

HALL-NEAL FURNACE CO.
1322-42 N. CAPITOL AVE., INDIANAPOLIS 7, INDIANA

"Honeywell is running advertisements like these all summer long!"

Honeywell is helping me turn hot weather into cold cash!

Like other heating dealers, I used to hate hot weather—because it always put "the chill" on our sales and profits. But the Honeywell man changed all that one day last spring.

"Look," he said, "summer's really the best time for folks to buy heating equipment. They're not putting out money for fuel then. And you can give them better, faster service."

"Sure," I said. "But people never stop to think about that."

"But they can be *made* to think about it," he said. And he opened up copies of *Life, American Home* and *Better Homes and Gardens*. "Honeywell is running advertisements like these all summer long—telling readers why they're smart to buy new heating units and burners and controls in the *hot* months."

I agreed it was fine, persuasive advertising. "But will it really help me get business *now?*" I asked.

"You bet it will," he said, "particularly if you step up *your own* advertising and tie it in with Honeywell's campaign and that of your heating equipment manufacturers. And if you canvass old customer lists—promote cleaning and summer service—feature Honeywell controls for extra comfort and fuel savings. Do that—and I'll bet you forget you ever had a summer slump!"

Well, Honeywell ideas had paid off for me before—so I tried this one. And brother, it's really working! Even on the hottest days we have plenty of business—*profitable* business. Believe me, I'll be looking forward to summer from now on!

☆ ☆ ☆

For facts about Honeywell products that help boost your summer sales, see the column across the page.

MINNEAPOLIS **Honeywell**

First in Controls

NEW LITERATURE

(*Use Coupon on Page* 117)

Pointers on Air Conditioning 265

Practical Pointers on Air Conditioning, a 16 page illustrated booklet for laymen and expert, covers all phases of air treatment and air handling. Describes the properties of air, the problem of its control, and the application of diversified types of equipment to solve these problems.

United States Air Conditioning Corp., Minneapolis, Minn.

Versatile Gas-Oil Furnace 266

Circular describes a new furnace with conventional single wrap around heat exchanger designed for small homes. Available in high boy, low boy, or counterflow models, gas or oil fired.

Standard equipment is either a high pressure gun type oil burner or single port gas burner, all controls, draft regulator, humidifier, refractory, etc.

Radiation Furnace Corp., Benton Harbor, Mich.

Terne Topics 267

A copy of the second and subsequent issues of Terne Topics will be sent free of charge to sheet metal contractors and other readers who wish to have their names placed on the mailing list. The publication is issued to provide a medium for the exchange of ideas, methods, etc., in handling and applying terne metal roofing.

Follansbee Steel Corp., Pittsburgh, Pa.

Sheet Metal Machinery Catalog 268

A 12 page catalog of sheet metal working machinery and tools is available upon request. Items commonly used in sheet metal shops are illustrated and described complete with specifications. Current prices are listed.

Products cataloged include a varity of brakes, shears, turning machines, electric shears, punches, hand tools, and miscellaneous sheet metal equipment.

Central West Machinery Co., Chicago, Ill.

Draft Control Bulletins 269

Three bulletins on automatic controls and instruments deal with draft control systems for gas, oil, and stoker firing.

Each bulletin points out that a draft control system handles three important functions: 1) controls draft in the firebox during off periods to prevent excessive stack losses, 2) opens damper before restarting burner to provide safe starting conditions, and 3) switches to automatic draft control during burner operation to maintain constant draft in the firebox. This results in reduction of stack losses, retainment of heat in the furnace, more efficient burner adjustments for all firing rates, lengthening off periods, and less fuel used.

Want to take the "Slump" out of your summer sales curve?

It helps to feature *Honeywell* Controls like these!

Honeywell Oil Valves

1) The new Honeywell Delayed Opening Oil Valve (V4001) will help save you money by cutting out many no-profit service calls, help make you money as an easy-to-sell replacement item. It delays oil delivery to insure normal fuel-air ratio when combustion occurs. This means reduced carbon on burner nozzle, on electrodes and within heat exchanger. *2) The inexpensive V5000 Dribble-Proof Valve* withholds oil from nozzle until pressure is right for atomizing, shuts off oil when pressure starts to drop on shutdown. This means there's no dribble of oil to foul nozzle and electrodes.

Combination Furnace Control

Honeywell's new L486 Flexible Element Combination Furnace Control provides for the first time positive furnace protection. It will break the circuit to the burner and start the fan if the single sensing element should ever rupture for any reason. This means it's *fail-safe*. The L486 can be mounted inside or outside the furnace casing, or remotely – up to 60 inches from the sensing element.

Honeywell Thermostats

1) The new Chronotherms are the most sensitive, most accurate thermostats ever built! They *automatically* lower the temperature at night, *automatically* raise it in the morning. A recent survey shows that 3 out of 4 thermostat owners raise and lower temperature settings every day. And the vast majority have to do it by hand! These facts add up to a wonderful selling opportunity. *2) Honeywell's Time-O-Stat* is distinguished from ordinary thermostats by "Day-Nite" control that provides automatic morning pickup. And its Positive Shut-Off feature (optional at no extra cost) allows your customers to turn off the furnace at the thermostat.

For full facts on the above controls, and for free illustrated folder explaining how Honeywell's new consumer advertising is helping you, write Minneapolis-Honeywell, Dept. AA-7-110, Minneapolis 8, Minn.

MINNEAPOLIS **Honeywell**

First in Controls

Are you overlooking profit underfoot?

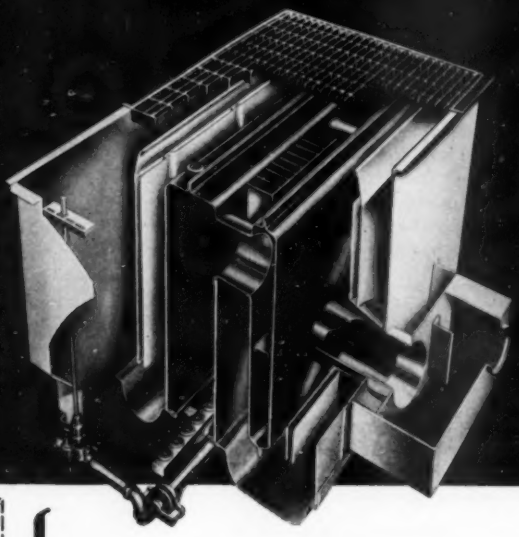
FRUGAL *Gas* FLOOR FURNACES

. . . give you all these features:

- Only 25½" overall depth
- 35,000 to 70,000 BTU ratings
- More heat from less space
- Super-efficient, extra quiet
- 10-year guaranteed combustion chamber
- AGA approved
- For natural, manufactured, bottled gas
- "Triple-plate" outer casing
- Base 100% safety pilot
- Factory assembled
- Easy to install
- Rust-proof, trouble-free burner parts
- Completely automatic—M-H control

A natural for contractor profits, the WASHINGTON FRUGAL Gas Floor Furnace is easily installed in new or old homes . . . in the floor of any building with or without a basement. Producing as much as 50% more heat, it is two whole inches shallower than comparable units.

Competitively priced, these new floor furnaces are made in 35, 50 and 70 thousand BTU ratings. For new installations or quick, low-cost conversions, earn extra profits and extra customer good will with WASHINGTON FRUGAL Gas Floor Furnaces . . . product of Gray & Dudley, a respected name in heating appliances for almost 90 years. Use the coupon for detailed information.



Please send me specifications and details on WASHINGTON FRUGAL Gas Floor Furnaces.

I am a ☐ Dealer ☐ Contractor

Name_____

Firm_____

Address_____

City_____ State_____

GRAY AND DUDLEY CO., Nashville, Tenn.

Established 1862

The most complete line!

NEW LITERATURE

(*Use Coupon on Page* 117)

Application of each control is shown by a pictorial layout with functions of each control outlined. Each bulletin is complete with typical wiring diagrams showing a draft control system can be easily incorporated into the burner control system. Wiring diagrams also show relationship of other automatic controls such as pressure and temperature controls, stoker timers, and gas valves.

Perfex Corporation, Milwaukee, Wis.

Metal Screw Handbook 270

A revised 24 page, pocket size handbook containing self tapping screw selection, application information, recommended hole sizes and corresponding drill size numbers.

Booklet No. 480 is designed for handy reference.

Parker-Kalon Corp., New York, N. Y.

Filter Reference List 271

The sizes and number of filters required for air conditioning units manufactured by 31 companies, are included in a 16 page revised catalog.

Equipment is listed under manufacturer's identification numbers to facilitate ordering of filters.

Owens-Corning Fiberglas Corp., Toledo, Ohio

Bending Radii for Aluminum 272

A 11 by 17 in. chart suitable for hanging in the shop gives the recommended minimum radii for bending aluminum sheets. Chart lists radii for various gauges of the most commonly used alloys as a function of the thickness of the sheet.

Kaiser Aluminum & Chemical Sales, Inc., Oakland, Calif.

Warm Air Heating Catalog 273

A warm air heating catalog divided into four sections: 1) winter air conditioners, 2) gravity furnaces, 3) conversion burners, 4) controls.

Each product section starts with a selector guide index page which lists type of fuel used and gives minimum and maximum Btu capacities of products included in the section.

Catalog contains cutaway and exterior pictures of units as well as complete ratings, dimensional drawings, and construction features. Standard and optional equipment lists also included.

A technical data section gives full information on selecting and installing warm air heating units, including heat loss tables, equivalent length and sizing tables for ductwork, and system design procedure.

American Radiator & Standard Sanitary Corp., Pittsburgh, Pa.

TELL 'EM AND YOU'LL SELL 'EM

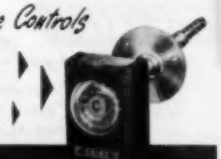
PUSH THIS COMPLETE LOW COST CRISE DAMPER CONTROL PACKAGE...

Make Big Profits

Now's the time to cash in on the swing to automatic heat. Show your customers with hand fired furnaces the way to luxurious, economical draft control . . . at a price anyone can afford to pay. Just stock and demonstrate the Crise Heat Control. It *costs you less*, yet offers your customers more in comfort and convenience. Everything you need for quick, easy installation comes in one attractive carton. *Over 1,000,000 in service.* Fully guaranteed. See your jobber now or write us.

Check NEW CRISE Temperature Controls

The most versatile line. Better built, better performing. Attractively priced. Models for warm air, hot water or fan control. Write for catalog.



CRISE

NEW LITERATURE

(*Use Coupon on Page* 117)

Valve Piping Tips 274

A useful sheet of tips on valve piping is available to readers upon request. The sheet illustrates installation hints for applying wrenches in a manner that will not strain, crush, or twist valve bodies.

Barber-Colman Co., Rockford, Ill.

Ultraviolet Units 275

A circular describes an ultraviolet air conditioner that consists of germicidal lamps mounted in a frame for installation in warm air heating systems. The unit was developed for sterilizing a constant flow of germ free air for protection against harmful bacteria in homes, cafes, office, factories, amusement places, and other places where people may congregate or where airborne infection may be communicated.

Tables give recommended number of lamps for 95 per cent disinfection in warm air heating and air conditioning systems of various Btu capacities.

D. William Fuller Co., Chicago, Ill.

Humidifier Display Stand 276

Printed in fire orange Dayglo ink, a combination card and stand is offered for use in merchandising humidifiers. The sales message is brief and to the point, bringing home to the prospect the many advantages of humidifiers with warm air heating. With the skillful use of the glowing color, no passer-by can fail to see it.

The stand is of permanent construction and may be used indefinitely. Fresh cards for replacement will be furnished from time to time upon request. The Series 600 humidifier for display is taken from the dealer's stock and may be sold at any time.

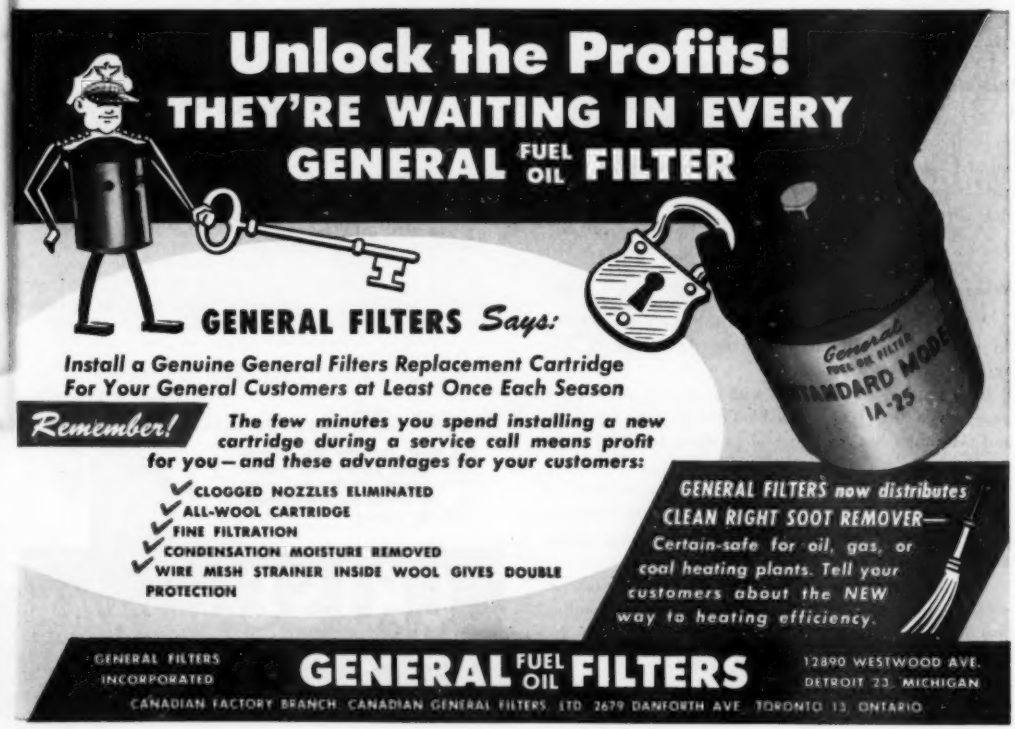
Skuttle Mfg. Co., Detroit, Mich.

Arc Welding Textbook 277

New Lessons in Arc Welding is a 320 page book based on lessons and instruction given at the Lincoln Arc Welding School.

The lessons cover basic fundamentals of arc welding as well as more advanced welding in alloys, sheet metal, and pipe. Practice materials, exercises, questions, and answers are given for each lesson.

The following points are explained: a) latest welding procedures for faster and lower cost welding, b) automatic and semi-automatic hidden arc welding procedures.


Unlock the Profits!
THEY'RE WAITING IN EVERY
GENERAL FUEL OIL FILTER
GENERAL FILTERS Says:
Install a Genuine General Filters Replacement Cartridge
For Your General Customers at Least Once Each Season
Remember!
The few minutes you spend installing a new cartridge during a service call means profit for you—and these advantages for your customers:
CLOGGED NOZZLES ELIMINATED
ALL-WOOL CARTRIDGE
FINE FILTRATION
CONDENSATION MOISTURE REMOVED
WIRE MESH STRAINER INSIDE WOOL GIVES DOUBLE PROTECTION
General
FUEL OIL FILTER
STANDARD MODEL
IA-25
GENERAL FILTERS now distributes
CLEAN RIGHT SOOT REMOVER—
Certain-safe for oil, gas, or coal heating plants. Tell your customers about the NEW way to heating efficiency.
GENERAL FILTERS INCORPORATED
GENERAL FUEL OIL FILTERS
12890 WESTWOOD AVE.
DETROIT 23, MICHIGAN
CANADIAN FACTORY BRANCH CANADIAN GENERAL FILTERS, LTD. 2679 DANFORTH AVE. TORONTO 13, ONTARIO

THREE OIL-O-MATIC STARS

EACH A SMASHING SUCCESS!

Oil-O-Matic's MANAGEMENT MANUAL FOR DEALERS... the powerful *new* sales story "Metered Low Pressure"...the *guaranteed-forever* OIL-AIR NOZZLE: these are but a few samples of the kind of factory-thinking that keeps the Oil-O-Matic Dealer a step ahead of competition! Check the facts...you'll find that *now, more than ever, the Oil-O-Matic Dealer has the industry's best franchise.*

There is a BIG difference in Oil Burner franchises!

OIL-O-MATIC

For full details of the Oil-O-Matic Franchise, write...
WILLIAMS OIL-O-MATIC DIVISION
Eureka Williams Corporation
BLOOMINGTON • ILLINOIS

1. OIL-O-MATIC'S MANAGEMENT MANUAL FOR DEALERS

A 235-page guide to sound, profitable long-term business operation for Oil Heat Dealers. *Clear... concise....complete!*

Now—in black and white, step by step—a ready reference for *every* subject, every function for a thriving dealer operation! Into this MANUAL have gone months of research and study...years of experience with successful dealers...by engineers, sales executives, service experts, business administration men...all with but one goal: *steadily increasing profit every year and a sound, long-term business, for every Oil-O-Matic Dealer.*

2. OIL-O-MATIC'S NEW, HARD-HITTING SALES STORY "METERED *Low* PRESSURE"

A new approach...a *different* approach...to sell the BIG difference in oil burners! "NO WASTED FUEL"—"NO COSTLY SERVICING"—"OUTLASTS AVERAGE BURNER 2 to 1": powerful appeals that convince the homeowner of Oil-O-Matic's money-saving superiority. (And the Oil-O-Matic Dealer backs his sales story with facts.)

3. FIRST IN OIL HEAT HISTORY! LIFETIME GUARANTEE

Only Oil-O-Matic ...pioneer of the Low Pressure Principle over 30 years ago... offers a Lifetime Nozzle guarantee! Another powerful sales clincher for Oil-O-Matic Dealers.

LO-BLAST
ECONOMITE

. . . proves amazingly successful in cutting heating costs and improving comfort

A heating engineer writes:

"We got the gas bill and could hardly believe what we saw. Where we used to pay between $30 and $40 per month for oil and another $7 to $10 for bottled gas, our total for last December came to $16.17 (compared to over $40 for December, 1949).

"Our electric bill was also smaller and to top it off, our house was more comfortable, even though December, 1950 was a colder month than December, 1949. The pilot flame of the gas burner seems to supply just the right amount of heat to the furnace walls to maintain a temperature just below the cut-in point of the fan control. A few seconds after the burner starts, the blower starts and thereby stratification is practically eliminated.

"In my 20 years' experience as heating engineer, *I have never been more pleased with the performance of any apparatus than the Economite.*" (*Name and address on request*)

Dealers!

The above letter shows why Lo-BLAST Power Gas Conversion Burners sell! For over 19 years Lo-BLAST Burners have cut heating costs in buildings of every size and character. Write—today—for full information.

Lo-BLAST Burners are available in capacities from 70,000 to 20,000,000 BTU input.

The standard Lo-BLAST Power-type Gas Conversion Burner

MID-CONTINENT
METAL PRODUCTS CO.
1960 N. Clybourn Ave., Chicago 14, Ill.

NEW LITERATURE

(*Use Coupon on Page* 117)

c) how metals are made and how to identify them, d) how to make common machine parts by welding instead of casting, e) how to select correct welding joints.

The 6 in. x 9 in. book, illustrated with pictures and drawings, printed on fine paper, and bound in simulated gold embossed leather is priced at $1.00. Send order direct to 12818 Coit Rd., Cleveland 1, Ohio.

Lincoln Electric Company, Cleveland, Ohio

Fuel Saving Hints 278

A 24 page, three color booklet entitled 179 Ways to Cut Your Heating Costs, covers warm air, steam, hot water, oil, gas, and coal heating.

Information contained in the booklet includes: items to watch for in heating unit to help it operate at peak efficiency, checking of house construction details, location of thermostat, and proper thermostat setting under varying conditions.

Booklet is priced at 10 cents. Send order direct to 3000 W. Montana St., Milwaukee 1, Wis.

Heil Co., Milwaukee, Wis.

Gas Service Guide 279

Gas Burner Service Guide is a manual for diagnosing gas burner failure. Service suggestions follow the pattern of oil burner service manuals, listing the symptom, possible causes, and remedy.

Guide consists of 10 mimeographed pages and heavy paper cover. Copies may be ordered direct from the company at 50 cents each.

Adams Mfg. Co., 1530 *St. Clair Ave., Cleveland* 14, *Ohio.*

Handbook of Oil Burners 280

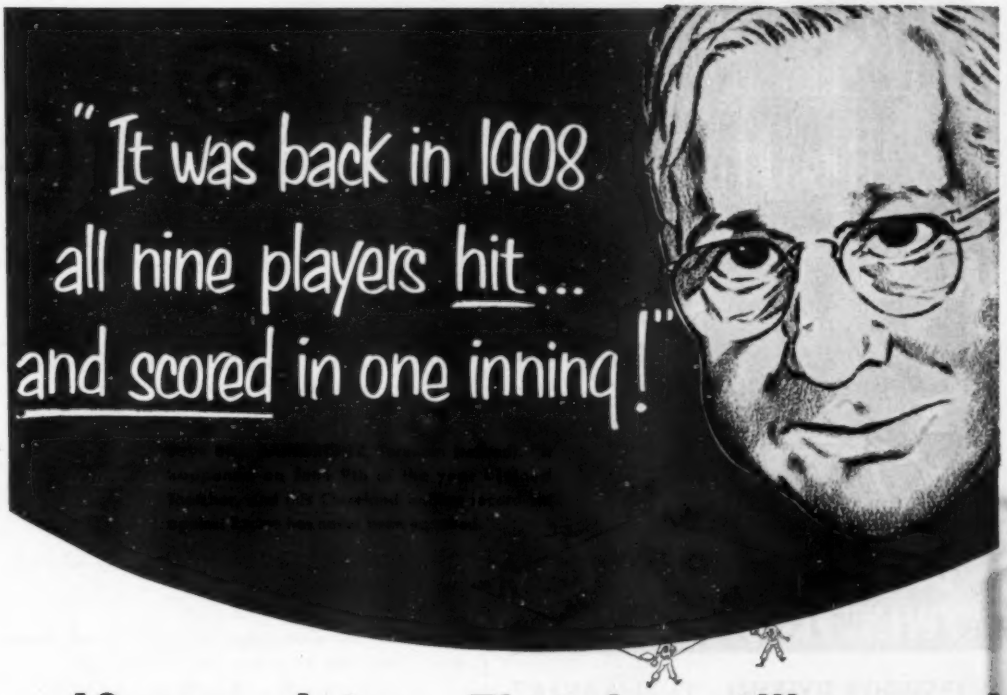
Handbook of Oil Burning, official publication of the Oil Heat Institute of America, is a complete treatise on all types of oil burners, combustion, atomization, vaporization, oil, refining, heat losses, installation, combustion chambers, controls, wiring, etc.

It is a major contribution to the literature on oil burning and contains 950 pages, more than 500 illustrations, and about 90 tables and charts.

The book is divided into nine sections: oil as a fuel; combustion of fuel oil; preparing oil for combustion; oil burning equipment; elements of heating systems; controls; selection of equipment; application, installation, and maintenance of oil burners; and standards.

A standard edition is priced at $10 and a deluxe edition of Morocco leather with the purchaser's name imprinted in gold on the cover is $16.50. Send orders direct to the institute at 6 E. 39th St., New York 16, N. Y.

Oil Heat Institute of America, Inc., New York, N. Y.



...43 years later—Thatcher still scores! Take the modern Hi-Boy. It's great for a small "homer"!

"The Thatcher Hi-Boy is built compact, specifically designed for today's small homes... another result of our more than 100 years of productive teamwork. Based on many generations of engineering home-heating equipment, we know that to score home any winner takes the spirit of *young blood* and the experience of old-timers."

A COMPLETE WARM AIR HEATING LINE FOR OIL • GAS • COAL

Illustrated is the Thatcher 501 oil-fired Hi-Boy winter air conditioner with 70,000 B.T.U. at reg. It's completely factory assembled!

The Oldest Name in Heating — Thatcher FURNACE COMPANY — *Specialists in Heating since 1850*

GARWOOD, N. J.

FINEST AUTOMATIC HEATING...

at Lowest Installation Cost!

Superflame

"TWIN" BLOOD FIRED

✔EXCLUSIVE OVERSIZE "FUEL-SAVER"

INCREASES RADIATING SURFACE APPROXIMATELY 100% CUTS CHIMNEY LOSS 40%

SAVES UP TO 1/3 ON FUEL!

Only Superflame Has It!

✔"TWIN" BURNERS..."TWIN" HEAT CHAMBERS!

Like two furnaces in one! Use one when it's MILD . . . two when it's COLD! This advanced design insures greater circulation throughout entire house at *every level!*

✔CUTS LABOR and MATERIAL COSTS TO THE BONE!

No air ducts needed! No basement needed! One complete unit that installs quickly, easily under the floor, out of sight!

Find out why Superflame will help YOU sell FASTER!

Superflame "GAS-SAVER" CONVERSION BURNER

Completely automatic with 100% Safety Controls. Silent! Highest efficiency! *Completely dependable performance!*

To: QUEEN STOVE WORKS, INC., Dept. AA71, Albert Lea, Minnesota

☐Please send Complete Catalog and Prices.

☐Send details on your sales program and how I can obtain an EXCLUSIVE SUPERFLAME FRANCHISE.

☐What is the name of my nearest SUPERFLAME Distributor?

Firm Name.....

Address.....

City.....Zone.....State.....

By.....(Name)

SALES SENSE

by Jack Bedford

Sales Sense is the invisible something that a salesman has that helps him keep both feet on the ground and take orders from another person with both feet on the desk.

$ $ $

They tell me that a salesman who brags about being boss in his own home isn't to be trusted. . .he will probably lie about other things, too.

$ $ $

Sales Sense, according to the Salesman's Sage, is the ability to use one's likes, dislikes, habits, passions, experiences, mind, education, body, and heart and not to be used by these things.

$ $ $

Heard about the salesman who was informed that his wife had triplets? All he could say was, "I can hardly believe my own census."

$ $ $

Salesman Sam says the altar is where the bachelor loses control of himself.

$ $ $

I wonder why some people continually knock democracy? Don't they know they can't beat it?

$ $ $

Salesman's wives think a fishing rod is a pole with a worm at each end.

$ $ $

We all learn to do things by doing them—talk by talking, walk by walking, and sell by selling. Every sale is a golden opportunity to learn some new selling technique that will make the next sale easier.

$ $ $

Salesman's Sage observed that it is nice to know that when you help someone else up a hill you are a little nearer the top yourself.

$ $ $

Running after a woman never hurt anybody—its catching them that does the damage.

$ $ $

Rubbing in the other fellow's mistakes will not rub out our own.

$ $ $

A bank, they tell me, is a place where you can borrow money if you can present sufficient evidence to show that you don't need it.

$ $ $

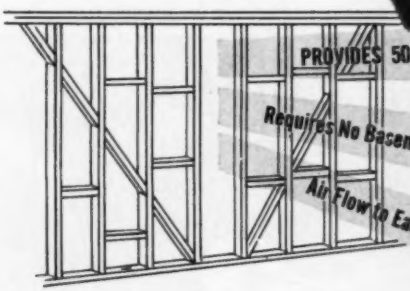
I wonder why work is such an unpopular way of earning money?

$ $ $

Sales Sense resembles military strategy in the ability to be able to mass one's personality in any sales situation —to mobilize all of one's resources to close the sale quickly, easily, and satisfactorily.

New! Pion-Aire gas wall circulator

Actually Fits *Between* Standard Studs!



PROVIDES 50,000 B.T.U. INPUT

Requires No Basement or Floor Space

Air Flow to Each Room Adjustable

It's the heating sensation of the day! Now you can meet your long-felt need for clean, economical 50,000 B.T.U. heating in homes, motels, stores, offices. **Pion-Aire** gives you quick sales, easy installations, a good profit.

Customers are delighted with the beautiful installation jobs. No cutting of floor or floor covering. Valuable floor space saved.

Pion-Aire's diverter automatically circulates clean, warm air. Air flow to each room adjustable. No obnoxious fumes—no sweating walls or windows. Thermostatic or convenient hand-height manual control. Fine for second floors. Priced low. Economical to operate. Heating elements guaranteed 10 years against burning or rusting out.

Write **FOR FREE BULLETIN!**

Architects in your area are hearing about and specifying Pion-Aire. Be sure you get your full share of this profitable business. See your jobber. Also write us for information about the complete line of Pion-Aire Wall Heaters.

Pioneer FURNACE CO. • **3131 San Fernando Rd., Los Angeles 65, Calif.**

Division of Pioneer Water Heater Corporation • Manufacturers of Pioneer Water Heaters

OT*
SERVICEMAN SAYS—

"Imagine that!
JUST TIGHTEN 2 SET SCREWS
TO ATTACH A
WEBSTER ELECTRIC UNIT"

"For my money a trouble shooter doesn't have to look like a complete machine shop . . . I got away from that long ago. For example, I recommend Webster Electric Fuel Units and use them on all replacement work because all I have to do, to install a Webster Electric unit, is to tighten two set screws with an Allen wrench. Could you find anything more simple? And I know when I'm done that my fuel unit troubles are over on that job. Remember, you can save time and trouble too, by just specifying Webster Electric Fuel Units."

*Old Timer

An identical unit is made for sale in Canada by Canadian Acme Screw & Gear, Ltd. of Toronto, under license by the Webster Electric Company, Racine, Wisconsin. Established 1909.

WEBSTER ELECTRIC
RACINE • WISCONSIN

Where Quality is a Responsibility and Fair Dealing an Obligation

INDUSTRY ITEMS

A PERMANENT LABORATORY and a classroom for training dealers and their servicemen in the most advanced service techniques have been set up by Gilbert & Barker Mfg. Co. at the factory in West Springfield, Mass. This company makes the line of Gilbarco oil heating equipment.

An intensive four-day course has been carried on weekly since the first of May with dealers from various geographical areas in attendance each week. In the first series of courses some 200 men from the eastern seaboard attended. Dealers from other sections will attend the second series opening early in September.

Gilbert & Barker Laboratory

Only one day is spent in classroom work, in which the operating principles of Gilbarco conversion burners, suspended furnaces, warm air conditioners and boilers are covered. Laboratory work on units under fire occupies the remainder of the course with special training in the use of instruments to set fires at highest efficiencies and to diagnose and correct troubles. More than 30 laboratory problems are set up with fires poorly adjusted, controls wired incorrectly and fuel units, motors, transformers and other components fixed to malfunction. It is the task of the trainees to correct each one of these conditions in accordance with the best of modern practice.

The new course was established under the guidance of Harry J. Lanyon, manager of the oil heating equipment sales division. Harold K. Ricker is director. Lectures and demonstrations are given by Norman J. Jardine, Robert G. Richardson and John Smith of the sales engineering staff and William Keay, field service manager.

A PLAN DESIGNED to help their customers who are seeking defense work has just been announced by Joseph T. Ryerson & Son, Inc., steel distributors. For many years, the Ryerson company has published a pictorial type newspaper which is circulated nationally to firms in all lines of business. Now, for the first time, space will be made available in the next issue of this paper for in-

sertion of classified advertisements for 1) prime contractors who have work to sub-let and are looking for shops that can handle it, and 2) shops that have open time and are seeking defense work on a subcontract basis.

A Ryerson spokesman said that all customers had been invited to use the new classified advertising section in the next issue, without charge. Advertisements for prime contractors will briefly describe the work to be sub-let, size and shape of part, quantity needed, kind of material, delivery required, etc. Shops looking for subcontracts will state the kind of shop they have, kind of material handled, size limits, production capacity, facilities for tooling, number of employees, financial rating, etc.

This plan to give wide publicity to concerns looking for defense work, and to firms that have work to sub-let, has the encouragement and approval of the National Production Authority. As a medium of exchange, it is believed that the Ryerson paper will be instrumental in bringing together many prime and subcontractors, thereby speeding the country's defense program.

W. R. HOFFMAN, Cleveland manager of the Dravo Corp. machinery division, Pittsburgh, has announced the appointment of Erwin S. Mason, Jr., as sales engineer for the machinery division in the Cincinnati, Ohio, territory. His office will be in the Southern Ohio Bank Building, Cincinnati.

NEW ASSIGNMENTS for three district sales managers have been announced by John K. Knighton, general sales manager of Servel, Inc.

Leonard W. Hadley, district sales manager at Kansas City, has been appointed manager of Servel's Evansville sales branch, serving southwestern Indiana, southeastern Illinois, western Kentucky and three counties in northwestern Tennessee.

Michael P. Noll, formerly district manager at New Orleans, now becomes Kansas City district manager. He is succeeded in New Orleans by Robert R. Clarke, formerly district sales manager in Detroit.

Mr. Hadley joined Servel in 1948 as a retail sales development representative. Mr. Noll has been with the company since 1933, as a sales engineer, sales promotion representative, air conditioning engineer and district manager. Mr. Clarke, who came to Servel in 1939 as a sales cadet, has served as cadet supervisor, plant layout engineer, assistant foreman (in World War II aircraft production) and dealer sales manager.

ENTRY OF the Goodmack Industries, Inc., of Detroit, into the home and commercial heating fields is announced by George J. Goodheart, president. The company will manufacture a line of heating products designed by Henry Mackaye, the original patentee of the Silent Automatic burner. The news was released simultaneously with the election to the board of directors of Goodmack of Sidney W. Janes, president of Northwest Metal Products, and P. A. Emerick, special sales engineer for Dana Corp., both of Detroit.

Goodmack will market the new line, consisting of oil and gas burners, low pressure steam and hot water

OT*
SERVICEMAN SA
I have no trouble-
BECAUSE WEBSTER ELECTR
TRANSFORMERS ARE
'AT HOME' ON ANY BURN
"I find Webster Electric transformers real time-savers on my service calls. The interchangeable bases help me to service any make of burner faster and easier. What's more, I can pick up replacement units from my Webster Electric Service Station, so I don't have to stock a lot of specials. I decided, long ago, that I saved from every angle by standardizing on Webster Electric transformers . . . the line engineered with the serviceman in mind. Try them yourself and you'll be sold too."
*Old Timer
Webster Electric transformers are made by Webster Electric Company, Racine, Wisconsin. Established 1909.
WEBSTER ELE
RACINE • WISCO
Where Quality is a Responsibility and Fair Dealing an Obligation

AGAIN in '51

MORE FURNACE MANUFACTURERS THAN EVER BEFORE WILL USE THE KRESNO-STAMM *P.A.G. *Ball Flame* BURNER

This year more manufacturers than ever before—at least 59—will use the Kresno-Stamm P.A.G. Ball Flame Burner. For every application they have overwhelmingly accepted the Ball Flame as the best and most versatile unit.

Hi-Boy

HI-BOY

More manufacturers of Hi-Boy furnaces will use the Ball Flame Burner.

GRAVITY

More manufacturers of Gravity furnaces will use the Ball Flame Burner.

Gravity

COUNTERFLOW

More manufacturers of Counterflow furnaces will use the Ball Flame Burner.

Counterflow

UTILITY

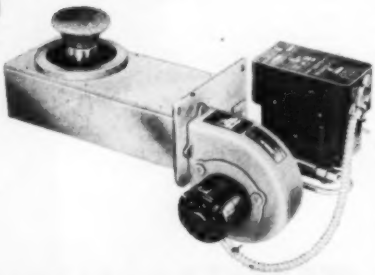
More manufacturers of Utility furnaces will use the Ball Flame Burner.

More manufacturers choose the versatile Kresno-Stamm Ball Flame because

- ✓ It costs less than a gun type burner.
- ✓ It operates more efficiently at capacities up to 1 G.P.H.
- ✓ It costs less to install.
- ✓ It requires no combustion chamber.
- ✓ It requires no stack relay.
- ✓ It is a profitable addition to their line of gas burners and gun type oil burners.

The Kresno-Stamm P.A.G. Ball Flame is your best bet, too. Write today for specifications.

Utility



*Pressurized Air Gravity

KRESNO-STAMM MFG. CO. (America) Inc.

PALISADES PARK, N. J.

Canadian Affiliate: Kresno-Stamm Mfg. Co. (Canada) Ltd.

1452 Drummond Street • Montreal, P. Q.

boilers, warm air and circulating heating furnaces and hot water heaters, through conventional trade channels. Plans are now being made for an extensive advertising and merchandising program to dealers and distributors, builders and architects.

Henry Mackaye, in addition to being the designer of the Silent Automatic rotary-type oil burner, is one of the prominent men in the heating industry. He was for many years general sales and service manager of the No-Kol Co. of America and has been general manager of the A. B. C. Burner Co. of Chicago and New York.

BOSTON MACHINE Works Co. of Lynn, Mass., manufacturers of the BosMaco line of oil heating supplies and the Boston Breese horizontal burner announce the appointment of three new factory representatives.

B. B. Vickery

Charles Byrum

Burt B. Vickery of 1931 North Allen St. Charlotte, N.C., will represent the company in the states of North and South Carolina. Charles Byrum, 2337 North Gale St., Indianapolis, Ind., will represent the company in the state of Indiana, Kentucky, and southern Illinois. William B. Forrest, 18505 Coyle, Detroit, 12, Mich., will represent the company in the state of Michigan.

Each of these men has had years of experience and background in the oil burning and heating field. They are especially trained in the latest developments in the field of efficient oil burning and have a complete knowledge of the products of the company.

Their duties will be to contact the distributor-dealer trade throughout their respective territories and manufacturer accounts.

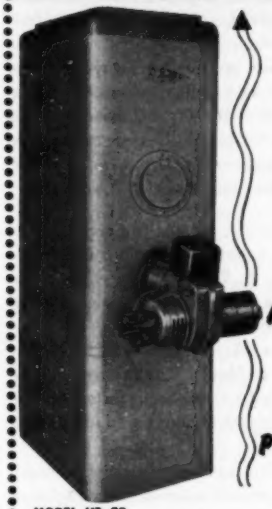
W. B. Forrest

R. L. Day

GENERAL CONTROLS, manufacturer of automatic controls, has a new factory sales engineer, it was announced by J. F. Ray, vice president in charge of sales.

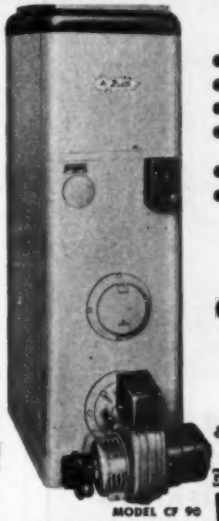
Robert L. Day was appointed to the position this spring and his headquarters are at the Glendale plant. Mr. Day spent the last year as senior sales engineer in

THE *Delta* WINTER AIR CONDITIONER *WITH FOUR STAR FEATURES!*



PRICE
DELIVERY
APPEARANCE
PERFORMANCE

MODEL HB 90
VERTICAL FLOW
FOR CONVENTIONAL USE



MODEL CF 90
COUNTER FLOW
FOR PERIMETER HEATING

- Only 5'2" from top to bottom
- 90,000 BTU's bonnet output
- Extremely efficient in operation
- Factory assembled — ready for installation
- Famous Delta Flanged Oil Burner
- Large Access and Inspection Door

Send for
COMPLETE LITERATURE
of the DELTA line

GAS & OIL BURNERS • BOILERS

FLOOR, WALL & SUSPENDED FURNACES

DELTA HEATING CORPORATION
COLE ST. at READING R. R.
TRENTON 8, NEW JERSEY

NOW AVAILABLE
by reader request

A complete reprint booklet of the series of articles published in the August, September, October, and November issue of American Artisan—

Heating Basementless Houses with Warm Air
by S. Konzo, W. R. Hedrick, and J. M. David

A manual for designing and installing perimeter warm air heating systems—a method which features a combination of radiant and convection heating.

Step by step, each important consideration in the application of warm air heating in basementless houses is fully described in detail by heating men in a manner that can readily be followed and applied by the warm air heating industry.

Price – $1 Per Copy

AMERICAN ARTISAN

6 No. Michigan Ave. **Chicago 2, Ill.**

Compare the Value

Clipper

FORCED AIR GAS HEATING

The Henderson Clipper, Clipperette and new Hendy "60" offer a complete range in B.t.u. input, from 60,000 to 200,000. Each model *challenges comparison* in design, materials, construction, performance and price! Investigate before you specify.

PRECISION CONSTRUCTION—Custom standards of craftsmanship combined with modern assembly-line production. Even the panels are fitted to a tolerance of 1/64th inch!

HENDERSON BLOWERS—Our own design, produced complete in our own factory, painstakingly balanced for smooth, quiet operation! No others like them.

FACTORY TESTING—Every unit is completely assembled at the factory and tested in actual operation. Saves time, saves trouble on the job.

Write for "Compare the Value" booklet

HENDERSON

FURNACE AND MFG. CO. - SEBASTOPOL, CALIF.

CLIPPER • CLIPPERETTE • HENDY "60"

the San Francisco factory branch office.

In his new job, Mr. Day will assist branch office personnel by handling technical inquiries from customers concerning heating, industrial, and refrigeration controls made by General Controls.

He brings to his new assignment many years of practical experience and an excellent educational background. During World War II, Day was associated first with Aircraft Accessories Corp., as a liason engineer, and then with the Aerojet Engineering Corp., where he was a production engineer on jets and missiles.

SPECIAL FIELD ASSIGNMENTS, created to develop closer cooperation with heating equipment manufacturers, were recently announced by K. L. Wilson, manager of manufacturing accounts for the heating controls sales division of the Minneapolis-Honeywell Regulator Co.

Sales engineers Thomas A. Reed, Robert R. Moore, George Keller and James R. Maxim were promoted to the new posts. They will make their headquarters in the Honeywell offices in Hartford, Columbus, Indianapolis and South Bend.

Mr. Reed, an engineering graduate of the University of Minnesota, joined Honeywell following his discharge from the Navy in 1946. He has held various sales positions in the Chicago, Indianapolis and Minneapolis offices, and will now supervise manufacturing accounts in the Hartford area.

Mr. Moore has been transferred from Minneapolis to Columbus, Ohio, where he will be responsible for contacting manufacturers of heating equipment in the Columbus, Dayton, Cincinnati and Pittsburgh areas. Mr. Moore joined Honeywell in 1947, after his discharge from the Army. He has been a sales engineer in the Detroit office and the home office in Minneapolis.

Mr. Keller, former district manager of the Honeywell South Bend office, has been promoted to account executive, and will represent the firm in dealings with heating equipment manufacturers in the vicinity of Indianapolis and Louisville. He is a graduate of Indiana State College, and has served in various sales capacities in Indianapolis and South Bend since he joined Honeywell in 1940. Since 1949 he has been district manager of the South Bend office.

Mr. Maxim of the Indianapolis office is transferred to South Bend where he succeeds Keller as district manager. Mr. Maxim is a graduate of Norwich University in Vermont and has been a Honeywell sales engineer in St. Louis and Indianapolis since 1946.

W. R. EBY, a native of Oakland, Calif., has been named manager of the Pacific district of York corporation, according to John R. Hertzler, vice president and general sales manager.

Mr. Eby succeeds Rodney F. Lauer, who was recently elevated to vice president in charge of engineering and research for the air conditioning and refrigeration firm.

With York corporation since 1930, Mr. Eby had been

industrial sales manager of the Pacific district with headquarters in Los Angeles.

Although he was born in Oakland, Mr. Eby later moved to New Mexico and Arizona. He received his early education at various schools in the three states, graduating from Benson, Ariz., Union High School. He later attended the University of Arizona at Tucson, and after receiving a B. S. degree in mechanical engineering, he joined York.

Following an extensive course at the York factory at York, Pa., Mr. Eby was assigned to the Los Angeles office where he remained until 1934 when he was transferred to Seattle. There he gained considerable experience in the field before he was appointed Seattle branch manager in 1945. He has devoted much time to management functions, including disposition of the properties formerly held by the corporation there, and consolidating operations for improved operating efficiency.

Thomas A. Marshall, a native of Alameda, Calif., who was manager of the San Fransicso branch office of York succeeds Mr. Eby as industrial sales manager for the Pacific district.

A graduate of Standford University, class of 1935, Mr. Marshall joined the air conditioning and refrigeration firm immediately afterwards. After completing the York training course, he returned to San Francisco.

Dow D. Stone, a native of Medford, Ore., has been named branch manager of the San Francisco office, filling the vacancy left by the promotion of Mr. Marshall. Mr. Stone, who attended the Engineering Trade School at Los Angeles, was elevated from sales engineer. He has been with York corporation since 1942.

THE PHOTOGRAPH SHOWS Dick Judd, Premier Furnace Co. president and general manager, presenting an appropriately engraved watch to Roy Zelner of Dowagiac, Mich. The occasion was Mr. Zelner's retirement after serving 31 years with Premier.

Dick Judd makes award.

During the presentation ceremony Dick Judd commented about the fact that Mr. Zelner was the undisputed holder of the oldest employee record as he actually started working for Premier even before the buildings were

This popular emblem signifies National Lock — manufacturer of superior quality hardware since 1905. Important to the extensive National Lock line are latches, handles, hinges and catches skillfully engineered for use on metal. These durable hardware items are suitable for use on space heating units, air conditioning equipment, oil burners, stokers, gas heating units and humidifiers. Reflecting expert workmanship, they assure quick, easy application... positive action... years of trouble-free service. Look for the National Lock emblem. It stands for quality hardware items available to you "all from 1 source."

NATIONAL LOCK COMPANY
Rockford · Illinois

erected. In fact, he helped build the original factory that was started in 1919. When production began, Mr. Zelner became Premier's first shipping clerk — a position he held until he became plant guard in 1949.

In accepting the award, Mr. Zelner remarked that he will never forget the friendly, family attitude that has always prevailed throughout the Premier organization. He said, "From the front office right on down the organization to the shipping room door working with Premier has been a mighty friendly experience."

JOSEPH F. HEIL, president of the Heil Co., has announced the appointment of John Barclay as general sales manager to succeed William E. Simons who has left the company.

Mr. Barclay has been with Heil for over 12 years as sales representative and district manager at Seattle, Wash., and Hillside, N.J. He has an excellent working knowledge of all Heil products and his experience in serving distributors has given him a practical understanding of their marketing operations.

To fill the place vacated by Mr. Barclay's move to Milwaukee, William Schumacher, sales representative at Hillside, N. J., has been named district sales manager for that area.

Robert Miller, district sales manager at Kansas City, Mo., has been made sales manager of the road machinery division. He replaces Henry Giles who has decided to become an active member and general manager of J. S Innes, Ltd., Heil road machinery distributors at Toronto, Canada.

Stepping up into Mr. Miller's former spot as district sales manager at Kansas City is Ralph Nitz, who started as a service man for Heil 12 years ago and was a sales representative at Dallas, Tex. before his move to Kansas City.

John Barclay

K. H. Rauth

KENNETH H. RAUTH has been appointed district sales manager for the Van-Packer Corp., manufacturers of the complete, packaged Van-Packer chimney. Mr. Rauth, with many years of sales experience in the south, will handle a territory embracing the states of Georgia, North Carolina, South Carolina and Florida. His appointment is a part of an expansion program now being executed by Van-Packer.

JOSEPH T. WEISS, Interstate Machinery company head, was elected president of the Machinery Dealers National Association at their recent national convention held in Chicago.

Other officers elected were: first vice president, Edwin

. . . casings designed exclusively for YOUR FURNACE

by Atlas

Even the finest furnaces need attractive, well-designed casings. Customers want furnaces with both performance and beauty. Dealers want labor-saving, cost-saving casings which are quickly assembled without bolts or screws. Atlas casings please both dealers and customers. Built to combine the demands of your furnace models and the desires of your market, Atlas casings are yours exclusively, with your name, trademark or other identifying features.

Send your furnace specifications for cost estimates to:

Atlas MANUFACTURING COMPANY

EUSTIS AT ROBBINS STREET
ST. PAUL 4, MINNESOTA

Johnson, Strom-Johnson Machinery company, Chicago; second vice president, Thomas O'Brien, O'Brien Machinery co., Philadelphia; and treasurer, Leonard Morey, Morey Machinery co., New York.

The MDNA, formed in 1941, assists its members in disseminating pertinent information to the industry. The association has aided in the improvement of customer-dealer relationships and through its ethics and standards committees has greatly improved services offered by the dealers to their customers.

Chapters are maintained in five cities throughout the country, and Mr. Weiss, the new president, stated that "in the next year, we intend to open chapters in Indianapolis, St. Louis, Pittsburgh, Cleveland and Cincinnati." The organization's executive office is maintained in Washington, D.C.

EMERSON ELECTRIC Mfg. Co., St. Louis, Mo. has announced a number of organizational changes.

Henry C. Miller has moved from the post of works manager to that of vice president and general works manager.

Raymond E. Otto has been elected vice president and general sales manager. He is a veteran of 37 years with the company.

Ralph E. Petering has been made vice president and assistant treasurer.

H. C. Miller

R. E. Petering

Byron W. Jackson is now comptroller and assistant secretary. He was formerly chief accountant.

John A. Alles has been appointed director of purchases, armament division.

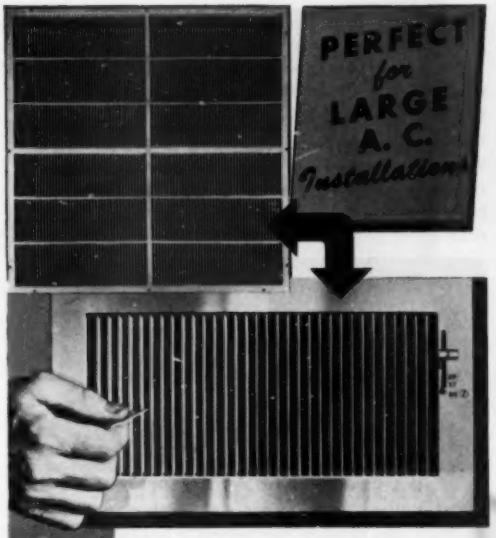
Lester A. Dahlheimer has been named director of purchases, electrical division.

Ralph E. Knowles is now works manager for the armament division, and Fred G. Sachleben has been made works manager of the electrical division.

ROBERTSON HEATING Supply Co., Alliance, Ohio, has opened a new warehouse in Steubenville, Ohio. The new branch will carry a complete line of heating and sheet metal equipment.

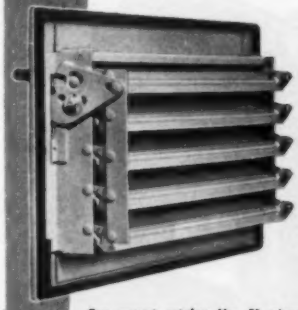
Norman Lacher, warehouse foreman and city desk salesman at Alliance, has been placed in charge of the new warehouse. He will be assisted by Arthur Denny and Herbert Williams. Salesmen in the territory will be Ted Starr and C. L. Brown.

INLAND STEEL PRODUCTS Co., Milwaukee, manufacturer of steel building products and consumer specialties, has announced a consolidation of sales divisions and certain



AVAILABLE in sizes from 6x6 through 48x36.

The H&C No. 88 Air Conditioning Register gives you everything you could possibly wish: Instant adjustment of air flow horizontally by means of just one valve handle in register widths up to 18 inches, two handles in larger widths up to 30 inches—with positive stop for desired position and removable handle to prevent tampering. Faster adjustment for sideway deflection—bars are keyed in 2½" sections (turning one turns them all), and they stay put. This results in more uniform setting and better appearance. Exceptionally narrow spacing provides excellent duct concealment.



Total depth of valve when open is 1 1/16", ideal for shallow and horizontal duct installation.

SAVES TAMPERING

Our current catalog No. 51 gives complete details. See your jobber or write for a copy.

HART & COOLEY MANUFACTURING COMPANY
500 EAST EIGHTH STREET
HOLLAND, MICHIGAN
IN CANADA: HART & COOLEY MFG. CO., FORT ERIE, NORTH ONTARIO

H&C

new managerial appointments, in a recent statement by Neele E. Stearns, president.

The consolidation, aimed at increasing administrative effectiveness, reduced the number of Inland's sales divisions from six to four. The former heating and ventilating products and sheets and roofing products sales divisions were consolidated into the new sheet metal products sales division. The former metal trim products and metal lath products sales divisions were united under the name of the latter.

E. J. Cullen

D. L. Rossiter

E. J. Cullen, former manager of the sheets and roofing products sales division, was named to head the new sheet metal products sales division. G. H. Schneider became assistant sales manager of the new division.

D. L. Rossiter, former manager of the company's Cleveland plant, was appointed manager of the new metal lath products sales division. A. T. Krueger and W. G. Baum were named assistant managers.

B. B. Barker, former manager of the Chicago branch warehouse, was appointed manager of the consumer products sales division in Milwaukee. M. P. Komar, formerly of the Milwaukee firm's parent company, Inland Steel Co., was named manager of the Chicago branch.

The new manager of the Cleveland plant, G. F. Gruenert, was formerly the manager of the Rochester, N.Y., branch. Arthur F. Pope, formerly of the Milwaukee sales district, was named to replace Mr. Gruenert as manager of the newly combined Rochester-Buffalo branch operations at Buffalo, N. Y.

B. B. Barker

David McEwen

David McEwen has been appointed sales manager of the Rochester Manufacturing Co., Rochester, N. Y. Mr. McEwen has had 10 years of experience in the manufacture of gauges and test kits supplied to the oil burner industry.

He will be assisted in the sale of oil burner tank gauges by John W. Kershaw and of industrial thermometers by Ralph Foster.

PEXTO No. 255 SLITTING SHEAR

A 16 gauge Rotary Shear
with capacity to slit
full width 36 inch sheets
any length . . .

LOW-PRICED . . . PORTABLE
Hand or power operated

THE PECK, STOW & WILCOX CO. since 1785 Southington, Connecticut, U.S.A.

CONTROLLED DRAFT BY
field
BAROMETRIC CONTROLS

...the only draft control that's nationally advertised to your customers

field TYPE M

First and finest for all types of automatic heating plants.

field TYPE R and "SCOTTY"

First and finest for all types of space heaters and ranges.

field BAROCHEK

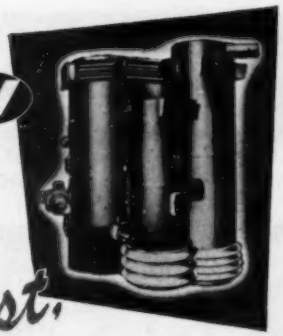
First and finest for hand-fired furnaces and boilers, a combination check damper and draft control.

field RNA-W

First and finest for automatic water heaters.

field CONTROL DIVISION
H. D. CONKEY & CO., MENDOTA, ILL.
AFFILIATES:
Conco Building Products, Inc.
Brick - Tile - Stone
Conco Materials Handling Division
Cranes - Hoists

pd

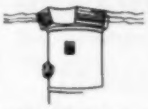


Now, Fast,

ECONOMICAL HEATING

THERMOBLOC

SELF-CONTAINED UNIT HEATERS!



Direct, circulating heat to working areas.

Uses smallest floor area per btu of any installation.

Fully automatic, maintains desired temperatures in work areas.

Easy to change location. 100% salvageable. Portable units available.

High Efficiency Heat . . . Perfect for Open-Space Buildings

Here's highly efficient, low cost heating for open-space buildings. THERMOBLOC is a revolutionary new-design, self-contained heating unit. Circulates controlled heat down in working areas —where and when needed. Has rugged, boiler-type construction. Attractive, modern styling!

Can be placed anywhere fast—ready to operate immediately. No pipes, ducts or radiators; installation and operating costs are far lower than other types or methods. Hundreds in use giving outstanding service in many types of buildings. Five capacities, adaptable to all needs. Multiple installations, combining various units, take care of exact btu needs of largest buildings.

Send for new data book. Contains tables and engineering data on heating constants, building materials, etc. Aids you in determining heating requirements of any plant. Our engineers will help on any heating problem. Mail the coupon today.

THERMOBLOC DIVISION
PRAT-DANIEL CORPORATION
6-7 Meadow Street, South Norwalk, Conn.
Manufacturers of P-D Power Equipment

GENTLEMEN:
Please send me your THERMOBLOC Data Book.
Name_____ Title_____
Company _____
Address_____

AN ALL-DAY SALES and service meeting on Armstrong furnaces was held recently by Grand Furnace Co., Armstrong jobber in Grand Rapids, Mich. The meeting was held at Rowe Hotel and was attended by more than 100 heating dealers. Robert A. Friestad, Grand Furnace general manager, opened the meeting at 10:00 a. m. with a discussion of the importance of product knowledge and merchandising ability in successful business operation.

Speaker's table at Armstrong banquet

H. C. Galleher, Armstrong advertising manager, then covered the construction features of installation and service procedures, winding up the morning session with a question and answer period on gas furnaces.

After a buffet lunch at the hotel, a quick bus trip to the Grand Furnace warehouse gave out-of-town dealers an opportunity to see the large stock of furnaces, pipe, fittings and related material kept on hand for prompt service.

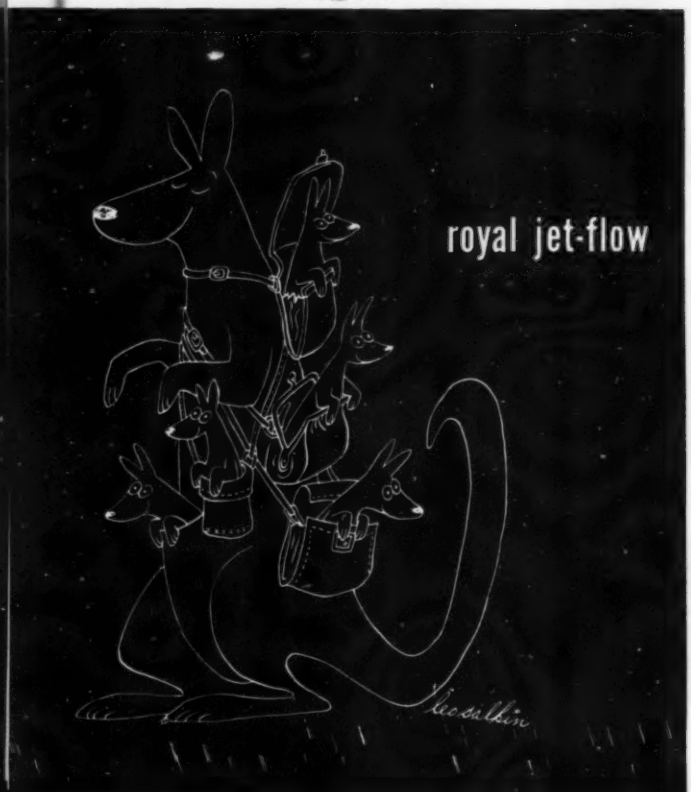
The early part of the afternoon session included a discussion of Armstrong oil furnace construction features, oil furnace installation and service procedures, and a question and answer period on oil furnaces, following the same pattern established in the gas furnace discussion in the morning.

L. G. Hickok, Armstrong executive vice president, then discussed the importance of the replacement market during the selling season ahead, and Galleher followed with an explanation of the various selling aids available in the Armstrong spring campaign, which is intended for use in developing replacement business.

Herb Rays then explained the various portions of Armstrong's dealer identification program including dealer imprinted installation signs, decals, wall charts, clocks, indoor signs, and the new Armstrong outdoor plastic sign, recently made available to dealers.

Last item discussed in the merchandising portion of the program was Armstrong's new sales presentation book, a two-color, loose-leaf, 97 page book for use in consumer selling by Armstrong dealers. The book and its uses were explained by Galleher, who used colored slides to illustrate each page.

Mr Friestad closed the afternoon session with a brief review of merchandising topics.

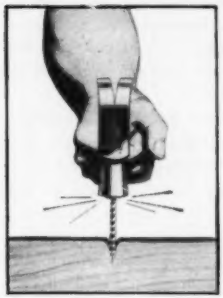


fits any pocket-book

ROYAL JET-FLOW *selected for "Better Homes and Gardens" $20,000 Five Star Home No. 2004 – Designed and built by Cliff May.*

ROYAL JET-FLOW *selected for 451 homes for Negroes built by Folmar-Flinn in Montgomery, Alabama. House and lot complete sells for $5200.*

Write to Royal Heaters, Inc., Alhambra, Calif., for complete information on AMERICA'S OUTSTANDING HEATING UNIT – THE ROYAL JET-FLOW.



in to stay when you use

P-K

TRADE MARK

Hardened SCREWNAILS

for fastening sheet metal to wood

- You drive it in like a nail, and as it spirals into the wood, it holds like a screw.
- P-K Screwnails are hardened. They won't bend or break, and, driven home, they won't work loose, or back out, even under the toughest vibration, expansion and contraction. Because each one makes a stronger fastening, fewer Screwnails need to be used on most jobs.
- The hard, needle point pierces lighter gauges of sheet metal with ease. For heavier sheets, holes can be punched first with a Screwnail Punch.
- Try P-K Screwnails, next time, for a better, faster, stronger job . . . and remember . . . IF IT'S P-K, IT'S O.K. Sold everywhere through accredited Distributors.

PARKER-KALON*

FASTENING DEVICES

Makers Of The Original Self-Tapping Screws

Write for this folder

Gives sizes, head styles, Punch information, full instructions for use. Tells you the many ways Screwnails will help you do a better job. Parker-Kalon Corporation, 200 Varick Street, New York 14, N. Y.

*TRADE MARKS REG. U.S. PAT. OFF.

Combustioneer
DOES IT AGAIN!
3
WAYS BETTER
• Triple mixing of gas and air
• Flat horizontal air suspended flame
• Hot gases "scrub" all exposed heating surfaces

The NEW

Combustioneer

GAS CONVERSION BURNER

with the Exclusive

TRIPLE-MIX BURNER HEAD

The ***Combustioneer*** TRIPLE-MIX single-port burner has been engineered for highest gas firing efficiency. No refractory required. Can be elongated or shortened for installation in most boilers or furnaces. All operating controls are mounted in a sturdy *20 gauge* metallic blue enamel finished cabinet. AGA listed for use with natural, manufactured, mixed, LP gas and LP gas-air mixtures. Capacities from 50,000 to 225,000 BTU per hour.

TRIPLE-MIX delivers an "air suspended" primary gas-air mixture "sandwiched" between upper and lower layers of secondary air. Flame spreads horizontally to the lowest permissible exposed heating surface. At this point, usable hot gases start scrubbing upward against the interior furnace or boiler walls for maximum heat extraction.

The ***Combustioneer*** TRIPLE-MIX gas conversion burner offers numerous exclusive features. *"Many firsts."*

When you sell ***Combustioneer*** products, you can be sure that no other manufacturer gives dealers more cooperation and real profit-making assistance. Mail the coupon for complete details on the ***Combustioneer*** Gas Conversion Burner!

Combustioneer GAS BURNERS • HIGH AND LOW PRESSURE OIL BURNERS • COAL-GAS-OIL FURNACES • STOKERS • HUMIDIFIERS

Manufacturers of Better Heating Equipment Since 1928

Combustioneer DIVISION

THE STEEL PRODUCTS ENGINEERING COMPANY

SPRINGFIELD, OHIO

Combustioneer DIVISION
The Steel Products Engineering Co.
1258 W. Columbia Street, Springfield, Ohio

CLIP AND MAIL TODAY!

Rush me full details on the new ***Combustioneer*** Gas Conversion Burner!

Name_____

Firm Name_____

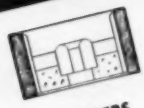
Address_____

City_____ Zone____ State_____

FOR BETTER DOMESTIC HEATING INSTALLATIONS . . .

Select WALSH-MADE REFRACTORIES

OIL BURNERS



STOKERS

GAS FURNACES

Fuel savings for your customers . . . greater profits for you . . . are the extras you get in the complete line of Walsh-made products for the heating industry. That's because Walsh offers more in experience, skill and facilities as a dominant manufacturer of high grade refractories for over fifty years. Plus values in Walsh products are the result of careful selection of raw materials, modern production methods and exhaustive tests that assure top quality and utmost dependability.

Walsh-made PeTeCo Combustion Chambers—Precast interlocking combustion chambers that arrive at high furnace temperatures immediately . . . assure complete burning of oil . . . full efficiency.

Walsh-made PeTeCo Baffles—Tripod type precast baffles with burnt refractory legs. Saves fuel . . . increases efficiency of heating unit.

Walsh-made Refractory Castable—Walsh H & B Castable forms a durable, one-piece air and gas tight lining. Sets up stronger. Lasts longer.

WRITE FOR CIRCULAR

Free bulletin describing the unusually complete line of Walsh refractories for the domestic heating industry will be sent upon request. Contains helpful information, specifications, sizes, etc. Send for copy today.

WALSH
REFRACTORIES CORPORATION
ST. LOUIS, MISSOURI, U.S.A.

FOR OVER 50 YEARS
MANUFACTURERS OF HIGH GRADE REFRACTORIES

101 Ferry Street • St. Louis 7, Missouri
FACTORIES: ST. LOUIS, MO. AND VANDALIA, MO.

FRANK GIBBONS, sales manager of the Viking Air Conditioning Corp., has announced the promotion of Richard F. Gang to the newly created post of assistant sales manager for the Cleveland manufacturer of blowers, fans and humidifiers.

Mr. Gang steps up to the new position from his former post as sales promotion manager of the heating department, which he has held since he joined the company in 1949. In addition to his work with the Viking sales force Mr. Gang will be in charge of the promotion of Viking heating and air conditioning products.

Two other appointments have been announced by Viking. J. B. Hine has been appointed by Phil Borkat, chief engineer, to head the newly-organized research division of the Viking engineering department. Mr. Hine and his division will concentrate on the long-range development of Viking products through research projects.

R. F. Gang

J. B. Hine

The second new appointee to the Cleveland firm, announced by Frank Gibbons, is Leo Kuhn who will represent Viking in a territory covering parts of Indiana, Ohio, Kentucky and West Virginia. Viking representative John Green who formerly served Viking customers in this territory has been transferred to the important eastern territory.

Mr. Kuhn formerly represented Revere Copper and Brass, Inc., in this area and will be remembered there by many sheet metal and heating firms.

Leo Kuhn

W. W. Stevens

CENTURY ENGINEERING Corp. has announced the appointment of William W. Stevens as new eastern district sales representative for Century heating equipment. His territory will cover the New England states, eastern New York and New Jersey.

Mr. Stevens has had many years of experience in the heating business both at the wholesale and retail levels. Previous to his appointment with Century, he had been associated with the Rheem Manufacturing Co. and as

get the facts on
ALUMINUM

All the facts you need to design and erect buildings using Alcoa Industrial Building Sheet have been assembled in this new book. Loading tables, erection details and accessory lists will show you how you can save construction time and maintenance costs.

Write for FREE BOOK

Because rearmament needs come first, the supply of Alcoa Industrial Building Sheet is limited, but Alcoa is not limiting its design and engineering assistance. Ask your local Alcoa sales office for booklet AD-247 or write ALUMINUM COMPANY OF AMERICA, 807G Gulf Building, Pittsburgh 19, Penna.

ALCOA

INDUSTRIAL BUILDING SHEET

RANDALL BEARINGS

Randall bearings last longer—run quieter because they are specially engineered and precision made for specific applications. Randall's are made from the very finest of materials and employ an exclusive double lubricating feature that assures longer lasting, trouble-free service. Randall bearings, proven dependable by millions of applications, have been accepted as standard equipment by approximately 85% of the leading manufacturers in the air moving industry. Randall bearings are available in a variety of sizes and styles for shaft sizes ranging from ½" to 3-15/16". Write today for additional information on Randall bearings or send your requirements. Randall's engineering department is at your service.

PILLOW BLOCKS
BUSHINGS
BAR STOCK
SHEET LUBRICATOR

Randall

GRAPHITED BEARINGS
THRUST WASHERS
BABBITTS
SAFETY COLLARS

RANDALL GRAPHITE BEARINGS, INC.

1000 S. GREENLAWN AVE. • LIMA, OHIO

WARD FLOOR FURNACE NATION-WIDE EXPANSION

makes

DEALERSHIPS AVAILABLE

Now No. 1 on the Pacific Coast and in the Southwest . . .
Soon to be No. 1 from coast to coast . . .
That's the program for WARD, original and finest gas floor furnace. Distributors and dealers in many areas are needed . . . and you may qualify if you act promptly.
This is a bona-fide opportunity to take on one of the nation's top lines in the heating field, endorsed by leading gas utilities. Use your letterhead or the coupon below to write for Ward's sales plan and full product details.

FACTS ABOUT WARD:

- 20,000-70,000 BTU capacity . . . 19 models . . . automatic and standard . . . natural, manufactured, and LP (bottled) gas.
- A top quality line. Two series . . . DeLuxe loaded with exclusive sales features. These include: Stainless steel combustion chamber • Bilt-in Thermo Control • Insulated inner shell • Brass screw cap lighter door • Insulated outer shell . . . Also standard promotional series.
- Now in two plants . . . Los Angeles, Calif. and Hamilton, Ohio

WARD HEATER COMPANY
Dept. CA-71, 1800 West Washington Blvd., Los Angeles 7, Calif.
A Unit of Estate Heatrola Division, Nama Electric Corp.

SEND THE FACTS!

Ward Heater Company, Dept. CA-71, 1800 West Washington Blvd., Los Angeles 7. Please send me full details about your line of floor furnaces.

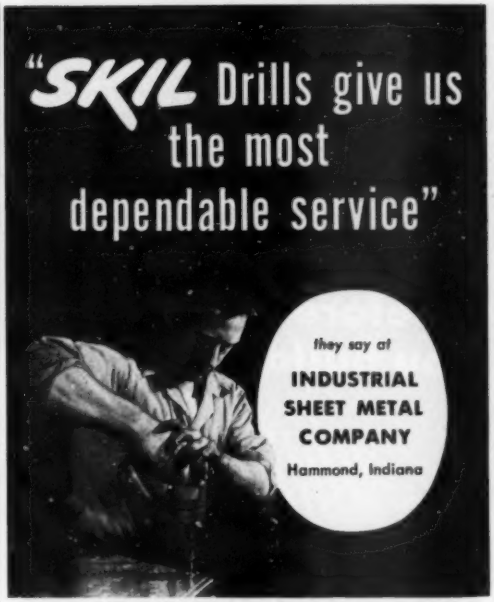
NAME _____

FIRM _____

STREET _____

CITY AND STATE _____

"SKIL Drills give us the most dependable service"



Count on SKIL Drills for greater drilling power— Here a SKIL Drill Model 47 bores through galvanized steel and a steel angle iron. Drilling is fast and accurate.

SKIL Drills have been on this job for 10 years, fabricating and installing specialized sheet metal applications for the largest industries in the area. SKIL Drills are used every day in the shop and in the field. They've got the power to meet the drilling requirements . . . the compactness and light weight for easy, convenient handling in any position. Industrial Sheet Metal Company says: "Ten years' experience has proved that SKIL Drills can be counted on for continuous and dependable service."

Count on SKIL Drills for convenient, constant use— Boring a hole in the flange of this stainless steel grease reclaimer is almost as easy as pointing a finger. SKIL Drills are compact and light weight.

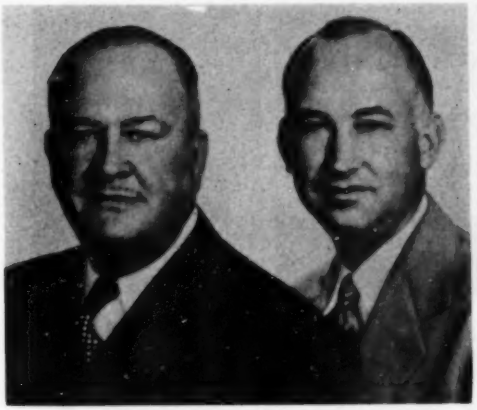
SKIL Drill—Model 47
Compact, heavy duty ¼" drill. Capacity in steel: 0" to ¼", in hardwood: 0" to ½". 1800 r.p.m. no-load speed. Overall length: 7¼" Weight: 3½ lbs. One of 25 models for all needs.

Call your nearby SKIL Distributor for complete information and a demonstration in your plant.

SKIL PORTABLE TOOLS

SKIL products are made only by SKILSAW, Inc.
5033 Elston Avenue, Chicago 30, Ill.
Skilsaw Factory Branches in Principal Cities
In Canada: Skilsaw, Ltd.
3601 Dundas Street West, Toronto 9, Ont.

eastern sales manager for the Lawson Manufacturing Co. He lives in Flushing, N. Y.



H. R. Onarecker W. D. Close

GEORGE J. READ, vice president of Chelsea Fan and Blower Co., Plainfield, N. J., announces the appointment of H. R. Onarecker and Co. of 2518 Times Blvd., Houston, Texas, as their representative for the state of Texas.

Messrs. H. R. Onarecker and Wayne D. Close, partners in this organization, are experienced electrical engineers and are available to answer any engineering questions pertaining to Chelsea's full line of industrial, commercial and residential fans.

Mr. Onarecker has been selling to the electrical industry for the past 25 years. He was associated for many years, as sales engineer, with one of the nationally-known electrical supply organizations.

Mr. Close has also been a sales engineer, associated with the electrical industry for many years, and during World War II served as Lt. Comdr. in the U. S. Navy in charge of electrical construction at the Naval Hospital in Houston.

J. P. BYRNE, for the past 13 years assistant manager of Wheeling Corrugating Co. Kansas City branch, has been appointed manager of that operation. Mr. Byrne succeeds the late W. T. Wamsley who died suddenly on May 24, 1951.

Mr. Byrne is well known in that section of the country having served the Kansas City branch for 20 years.

GENERAL FILTERS, INC., of Detroit, recently announced it has taken over national distribution of Clean Right soot remover. The remover is manufactured by Miller Products Co. of Lansing, Mich.

Clean Right, acting without flash or intense heat, gives positive soot removal in any type heating plant, flue, or chimney. Safety is assured, since only a red glow is noticeable as the soot is consumed.

Three sizes, the junior, handy, and thrift packages, are available. General Filters also has available a sprayer to facilitate application by the serviceman.

"Rochester, OUR GUIDE TO A BETTER GAUGE"

J.E.Kunkel
May 11, 1951
Rochester Manufacturing Co.
19 Rockwood Street
Rochester 10, N.Y.
Gentlemen:
The name "ROCHESTER" has been our guide to a better gauge since we have been in the oil burner business.
The ROCHESTER "DUAL-DIAL" OIL TANK GAUGE has proven to be the most dependable, leak-proof, trouble-free gauge we could find.
P. W. BEAMER, MANAGER
AUTOMATIC HEATING DIVISION
J. E. KUNKEL
Philadelphia, Pa.

Throughout the country, Rochester "Dual-Dial" gauges have become the standby of hundreds of dealers like Mr. Beamer. They've found from experience that these rugged gauges mean more satisfied customers and extra profits by eliminating needless service calls. You, too, can profit by these outstanding "Dual-Dial" features . . .

- LEAK PROOF
- PRESSURE TIGHT
- EASY TO READ
- EASY TO INSTALL
- UNDERWRITERS' LISTED

Stocked by leading wholesalers for all standard basement oil burner storage tanks with 1½" and 2" flanges. ORDER TODAY! Rochester Manufacturing Co., Inc., 66 Rockwood St., Rochester 10, New York.

ROCHESTER
MANUFACTURING COMPANY, INC.
DIAL THERMOMETERS GAUGES AMMETERS

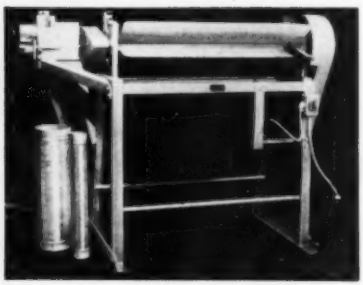
ROCHESTER DEPENDABLE ACCURACY GAUGES

FALLSINGTON

WHY NOT ROLL YOUR OWN?

Why not roll your own smoke pipe on the *New* Fallsington Model PR6 Pipe Rolling Machine?

The PR6 is pictured below and is of an all welded construction thus eliminating the chance of the breakage that is found in many machines.



The PR6 Roller will roll smokepipe 3″ to 12″ in diameter by 36″ long. The PR6 also has a crimping and beading attachment — as shown above on the left of the machine.

Not only will the PR6 save you labor but it takes up a small amount of floor space, only 30″ x 60″.

We also manufacture Presses — Multi Punching Machines — Pipe Locking Machines and the Famous Multi-Notcher.

Write for demonstration, our sales Representative will call with demonstrator.

FALLSINGTON MANUFACTURING CO.
FALLSINGTON, PA.
Manufacturers
SHEET METAL MACHINERY & TOOLS

EXPANDING ITS field sales force, the Timken Silent Automatic Division of Jackson, Mich., announces the appointment of two new district sales managers. The new

C. W. Wright A. P. Kelly

field men are Carl W. Wright (left) and Andrew P. Kelly. Mr. Wright's territory includes the South Atlantic states and Mr. Kelly handles western Pennsylvania. Before joining Timken, both men acquired a broad background of heating experience. They have completed the Timken factory training course and are now serving their respective territories.

Letters —

(*From page 73*)

The address is Amsterdam Printing and Lithographing Co., Liberty and Forbes streets, Amsterdam, N. Y. In quantities of 150, Amsterdam will produce filled-in giant wires for 21 cents each. The price drops to 6 cents each on orders for 25,000.)

A New Orleans scaffolding distributor uses an account-getting idea that could be adapted easily to selling warm air heating installations and service. Like the *Indoor Comfort* dealer, his problem is to show what he can do. The best way, he reasons, is to show what he *has* done. So he takes photographs of contruction work that uses his steel scaffolding. He interviews the contractor to discover what advantages the contractor has found, what he likes about the brand of scaffolding over competing brands, the job savings he has realized by using it. Then, with the contractor's permission, he writes a short advertising message. This is typed on an ordinary typewriter, using a piece of carbon paper to make the impression instead of the ribbon because that results in a cleaner impression. The advertising message is then pasted across the bottom of the photo. The photo is sent out to be copied, and when the copies return, these advertising pictures are mailed out to prospects.

He reports that the use of actual photographs in place of printed reproductions of the picture is relatively high in price, but not in results. For these have attention value. Because they detail how his product solved a problem, they have interest. He had no idea how much interest until one day a customer showed the distributor that he had kept every one of these in a special file. That

This square batten roof is painted green to blend with the chocolate brown siding of the P&H house.

At the 15th Annual Model Homes Exhibit on Atlantic City's famous Central Pier, more than 100,000 potential buyers will see this Follansbee Terne Metal Roof with its impressive styling and color. Follansbee Terne gives eye-appeal and plus-values to *any* home.

As a sheet metal man, it will pay you to promote and sell *your* type of roofing. Follansbee Terne Metal is easy to apply . . . gives you bigger profits for decks, flashings, valleys, coping, caps, leader heads, conductors, elbows and gutters.

Cash in on Follansbee's extensive advertising and promotion programs. You'll find your Terne Metal roofing market is practically unlimited.

FOLLANSBEE STEEL CORPORATION

GENERAL OFFICES, PITTSBURGH 30, PA.

POLISHED BLUE SHEETS AND STRIP **SEAMLESS TERNE ROLL ROOFING**
COLD ROLLED STRIP

Sales Offices—New York, Philadelphia, Rochester, Cleveland, Detroit, Milwaukee. *Sales Agents*—Chicago, Indianapolis, Kansas City, Nashville, Los Angeles, San Francisco, Seattle; Toronto and Montreal, Canada. *Plants*—Follansbee, West Virginia

FOLLANSBEE METAL WAREHOUSES
Pittsburgh, Pa. **Rochester, N.Y.** **Fairfield, Conn.**

ALFOL ASBESTOS insulated forced warm air unit, Metromatic Manufacturing Company, Everett, Massachusetts.

"It's Insulated with ALFOL just like the Mt. Palomar Telescope!"

Alfol Reflective insulation was installed in the Mt. Palomar Observatory to provide maximum protection for the 200 inch telescope and its delicate instruments. The same Alfol reflective insulation is used by Metromatic to obtain maximum efficiency in the famous Metropac forced warm air unit.

Alfol Asbestos insulation is pure aluminum foil combined with flat or corrugated asbestos. Compared to standard inch thick aircell, Alfol Asbestos is 88% more efficient, constitutes 75% less bulk, has one-fourth the weight, and costs only half as much. ***One easy-to-handle sheet of Alfol Asbestos is equal in efficiency to 1½ inches of ordinary aircell asbestos.***

It will pay you to try this light weight, modern insulating material. Write today for further information or send for free working samples and test it yourself! Address Dept. AA-5.

Alfol FIRST IN REFLECTIVE INSULATION

REFLECTAL CORPORATION
155 EAST 44TH STREET • NEW YORK 17, N. Y.

gave the scaffolding merchant an idea, and the following month, prospects received a heavy-manila file folder specially marked Scaffolding for keeping these sales messages.

(Quantity photo reproductions at low cost can be secured from Copy Art Photographers, 165 W. 46th Street, New York and from Howard Photo Service, 168 W. 46th Street, also in New York. The prices on 8 by 10 in. reproductions range from about $3.00 for 25 to $55 per 1000.)

Well Trained Salesmen—

(*From page* 71)

salesmen-in-training are invited to ask questions of the lecturer or the boss, and tell their opinions on what they have just heard.

A wind-up in which main points are reiterated, the lecturer fires questions at his audience, and the trainees demonstrate what they have learned.

As part of a continuing program to keep the salesmen informed and alert it is good policy to have a short conference or meeting at frequent intervals. These meetings can be discussions restricted to one particular problem that arose during the day. It is also good to brush up on sales techniques or technical information. A brief meeting after the close of business hours is also a convenient time to present a new product added to the line. If the men are thoroughly grounded in the features of the new product they can do a better job of selling it.

Latimer—

(*From page* 74)

the cost of making a new installation, is paid $5 for this survey — ample to cover the time and effort spent, plus some premium for the salesman's engineering ability. Then, if the prospect looks promising, and is definitely interested in a new heating plant, the salesman makes up a handsome presentation, which describes in simple, layman's terms, what equipment will be installed, where it will be located, what it will do for the home, etc. This presentation, which is elaborately worked out on special sheets provided for the purpose by Schmidlin Bros., is furnished to the prospect with an impressive cover. For turning out the presentation, the salesman is paid $2.50. When he returns to the prospect's home, to turn over the presentation to the homeowner and to explain its details, there is still another payment, in this case $2.50 for the time spent in driving to the home, sitting down and talking over the details, and closing the sale. In this way, total payments for each step amount to $10.

"We operate on the theory that if the heating salesman follows up on every possible prospect and goes through this same process with one after another, he earns $100 for every 10 complete contacts, presentation preparations, and demonstrations," Mr. Schmidlin said. "He is actually compensated $10 for going through the same routine with each prospect, whether he sells the prospect or not. In this way, we can be sure that every

It's the **LOW DOWN** DIRT trapped by
WILSON'S HAIR FILTERS
that GUARANTEES LONGER LIFE

In Wilson *Hair* Filters the entire dust-holding capacity is completely utilized. This means, *no surface dust stopping only*, but Full-Depth Dust Trapping at its best . . . and many extra months of filter life.

The *reasons* are so simple:

1. The hair media in Wilson *Hair* Filters act in the same manner as Mother Nature's proven way of filtering the air you breathe. It's the *hair* that cleans the air . . . more easily, more effectively, more economically.
2. The multi-directional distribution of the hair in Wilson *Hair* Filters literally invites all dust and dirt to come in and be trapped throughout the entire filter interior.
3. Most brands of air filters require oiling on their inlet surfaces. This stops dust prematurely, loads up the incoming air side and materially shortens filter life.

Wilson Hair Filters are not oiled on the inlet side. Instead, they receive an even distribution of mineral oil *on their outlet surface*, which:

(a) augments the already amazing ability of the hair itself, to catch and hold dust, and—
(b) builds an impregnable barrier which halts dust and dirt after reaching the furthermost practicable penetration point.

WILSON & CO., INC.
(Air Filter Division) 4100 South Ashland Ave., Chicago 9, Ill.

Wilson Hair Filters are another quality product of Wilson & Co., world-famous for meat products, sports equipment, pharmaceuticals, hair products, etc.

The famous Edgeseal, the original *Hair* Filter with the patented self-sealing edge.

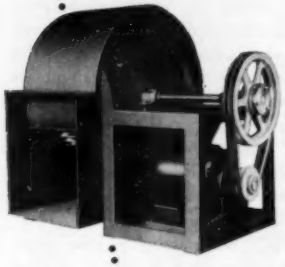
The popular Honeycomb, the dressed up *Hair* Filter that is so easy to handle.

Save delay. Save dollars. Save doubt. Send for FREE sample with details and prices.

INDOOR COMFORT
WILSON'S HAIR FILTER
WILSON & CO.

HERE'S YOUR COMPLETE COMPACT, VENTILATING BLOWER

Peerless Electric



BELT-DRIVE UTILITY BLOWERS

Peerless Belt-Drive Utility Blowers are designed to deliver large volumes of air at extremely economical cost. These blowers are widely used for general ventilation and exhaust where duct systems are required. The units are compact, easy to mount and quiet in operation.

HOUSING AND WHEELS

The arc-welded housings are constructed of 16-gauge steel, with sturdy spot-welded motor bases. Wheels are dynamically balanced.

MOTORS

Peerless manufactured. Available in all types of current characteristics.

ROTATION AND DISCHARGE

Furnished either for clock-wise or counter-clockwise rotation and to discharge in any direction.

CUSTOM FEATURES

Weatherproof covers, available for outside installation, eliminate the need for penthouse or other protection. Inquiries are invited for other special features that may be desired.

CAPACITIES

Tested in accordance with standard test codes.

Write for complete specifications

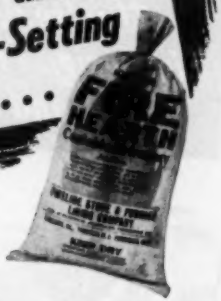
THE PEERLESS ELECTRIC COMPANY

Established 1893 • **WARREN, OHIO**

Peerless Electric

MOTORS • FANS • BLOWERS

Eat up those Stoker-Setting Jobs . . . with FIRE HEARTH



Handled by old methods, stoker settings can be a pain in the neck. But they're as welcome as the flowers in May to the contractor who has discovered Fire Hearth castable refractory.

Fire Hearth makes it easy to set stokers and line combustion chambers. You simply mix it with water and pour it into place. A little trowling shapes it into a workmanlike job you can be proud of. It's air setting and ready for use the next day. Has good structural strength and refractory quality to withstand temperatures encountered in domestic or commercial stoker installations.

In Fire-Hearth you have the best way, the quickest way, and therefore the most profitable way. It's packed in 50 and 100 lb. bags.

Renew those cracked firepots with FIRELINE

It just happens that the *best* way to renew burned-out firepots is also the easy way — therefore the profitable way. Packed in moist, ready-to-use plastic form, Fireline is easily installed around the firepot right through the furnace door. No dismantling; no waiting for castings. Fireline seals all cracks and holes; provides a better firepot; insures better combustion and real fuel saving. Packed in 50 and 100 lb. drums, 5 and 10 lb. cans.

Your kind of furnace cement IRONSET

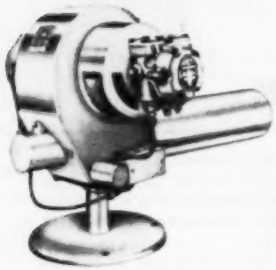
For new furnaces or resetting old ones, there's no furnace cement like Ironset. Product of a refractory manufacturer, it withstands higher temperatures without cracking, shrinking, bloating or blistering. Use Ironset on the next job and see the difference. Comes in 1, 5 and 10 lb. cans; 50 and 100 lb. drums.

Fireline products are stocked by leading jobbers. Write for descriptive literature, prices, discounts, and name of nearest jobber.

Fireline Stove & Furnace Lining Co.

1816 Kingsbury St., Chicago 14, Ill.

They're Way Ahead in Design · Performance and Sales



Models from 0.7 to 25 g.p.h.

It pays to sell the Sun-Ray because it's a quality line, built by one of the leading and oldest burner manufacturers. Sun-Ray burners are endorsed and specified by architects, engineers, builders, realty managers, federal, state and city departments everywhere. Thousands upon thousands of these burners are installed every year in homes, apartment houses, stores, factories, schools, churches, institutions, etc.

It pays to sell Sun-Ray because Sun-Ray sales literature, newspaper mats, window displays and signs make Sun-Ray known to your customers as an outstanding name for economical heating. Sun-Ray factory engineering and sales cooperation are outstanding.

For quicker service—Sun-Ray Burners are factory stocked in Buffalo, Chicago, St. Louis, Detroit and Portland, Ore. They are also warehoused by leading distributors throughout the country.

Investigate the Sun-Ray line from every angle—design, specifications, installation, service, performance, price. You'll discover—as have many others—that it pays off handsomely to enjoy a Sun-Ray sales franchise.

Inquiries invited from furnace and boiler manufacturers.

SUN-RAY FULLY AUTOMATIC OIL BURNERS

Famous the World Over for Quality and Economy

SUN-RAY BURNER MFG. CORP.

139-34 Queens Boulevard • Jamaica 2, N.Y.

man will make an exhaustive effort to sell every prospect, inasmuch as he is paid directly for the amount of energy expended on the prospect, win or lose. In brief, the salesman knows that his chances of payment for his work are not dependent upon whether the prospect signs the order or not — but instead, on whether he is willing to get out and do the work."

How does Schmidlin Bros. capitalize upon such a system? The answer is simplicity itself, according to Mr. Schmidlin. If each of his salesmen is willing to keep hitting the ball and making one presentation after another through every selling day of the week, there will be ample prospects originated on the law of averages alone, to make the system worth-while. "Ten effective contacts, presentations, and demonstrations are bound to turn up at least three or four prospects, often more, who become actual customers," he pointed out. Then, each salesman, of course, earns more per prospect contacted, when the installation order is consummated. If the prospect does not buy, however, the salesman is still paid enough to justify his time.

The system is basically a commission sales plan. When a sale is made the salesman's account is credited with the commission less advances made for surveys, presentations, and demonstrations.

Kruckman—

(*From page* 78)

operation early in August, producing 15 million pounds of finished aluminum forgings each year. The lease-contract was given to Willys-Overland.

The armed forces are holding industrial shows at various places around the country for the information and assistance of subcontractors. Prime contractors of military material show components and parts which they desire to farm out. Representatives of engineering, production and contracting groups, are present at the exhibits to demonstrate and to talk to those who wish to bid for subcontractors. The Army, Navy and Air Force usually end each exhibit by throwing the show open for the general public on the last day, and by staging a military demonstration. Communities which wish to be the stage for such shows should communicate with Project Officer, Armed Forces Small Business Exhibit, Department of Defense, Washington, D. C.

Just who will ultimately be in charge of CMP operations is in doubt at this time. It now comes under supervision of DPA, and is administered, under DPA, by NPA. NPA is headed by Administrator Fleischmann. On the other hand, the key committee which says who's who in CMP, is headed by Charles E. Wampler, director, DPA, Office of Program and Requirements, with Assistant Director Melvin Anshen, as vice chairman. Other members, yet unnamed, will represent civilian requirements, construction requirements, economic stabilization, food and agriculture, foreign requirements, industrial manpower, industrial requirements, military requirements, mines and mining, petroleum and natural gas, public utilities and

YOU'LL BE SITTING PRETTY TOO...

with the prestige and profit you will win when you sell

SNO-BREZE AIR COOLERS

which now carries the GOOD HOUSEKEEPING Guarantee Seal

SNO-BREZE OFFERS YOU

NATIONAL ADVERTISING

Coast-to-coast radio programs
Leading newspapers
National consumer magazines
National and regional fairs and exhibits

SNO-BREZE OFFERS YOU

SELLING AIDS

Merchandising displays, seals, banners, flyers, brochures, stuffers are available at no cost, plus a liberal cooperative advertising program. Here's real promotional backing that multiplies your sales.

SNO-BREZE OFFERS YOU

A COMPLETE LINE

From midget to giant, the new 1951 *SNO-BREZE* line contains coolers for every need Here's cooling comfort for trailer or mansion. There's a model for every residential, commercial, or industrial installation, along with a complete line of cooler accessories—sure fire repeat sale builders.

You can't go wrong with a product backed by 42 years of air conditioning leadership *and* guaranteed by the GOOD HOUSEKEEPING INSTITUTE.

Write today to Dept. A-4, Palmer Manufacturing Corporation, Phoenix, Arizona, for your SNO-BREZE catalog. We'll tell you how you can become a part of the growing network of money-making SNO-BREZE outlets.

PALMER MANUFACTURING CORPORATION
PHOENIX, ARIZ.—LOS ANGELES, CALIF.—LUBBOCK, TEXAS

TURNER

80th ANNIVERSARY LINE

QUALITY SINCE 1871

No. 475 *Low Pressure*

TINNER'S FIRE POT

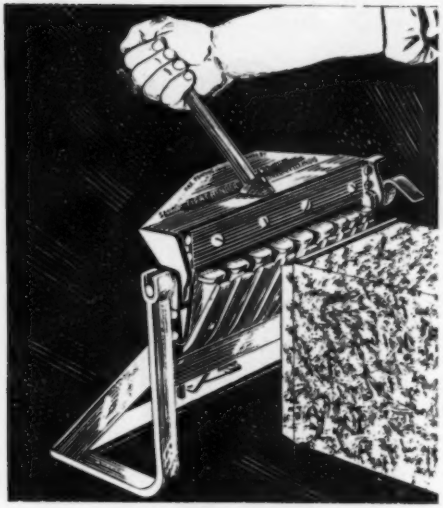
★ Ready for operation in 5 minutes.
★ Fuel capacity one gallon; burns for 9 hours on one filling.
★ Safer . . . reduces fire hazard of old-style charcoal burners.
★ Soldering iron rest keeps points of soldering coppers out of direct flame . . . saves re-tinning.
★ Complete with Turner's exclusive "Carburetor Control" . . . providing solid blue flame with more perfect combustion; also a flame control — for exact heat desired — which automatically cleans the orifice, thereby eliminating need for separate cleaner wire.
★ Construction assembly permits quick, easy accessibility and cleaning . . . wind-shield, top-plate, and bail handle are one unit, and can be lifted from tank in five seconds by loosening one wing nut.
★ Burner coil made of extra-heavy seamless steel tubing . . . protected by sturdy outer jacket that maintains heat without overheating . . . can be generated and used in heavy wind.
★ The combination may also be used for melting purposes.

See Your Jobber

THE TURNER BRASS WORKS

SYCAMORE, ILLINOIS

Since 1871



THE *Complete* DRIVE CLEATING MACHINE

Smith's Cleat Benders save wasted minutes that add up to hours . . . days . . . and weeks of needless effort. Works like a bar-folder in that a bend can be made and pinched down. Unlike a bar-folder or any other bender, it is so constructed to allow entering square ducts of various widths to make the bend.

FEATURES

- Fingers mathematically spaced unlike bar-folder or any other bender.
- Stop plate like bar-folder.
- Bending plate like bar-folder.
- Pinching down plate unlike bar-folder does not flatten heel of bend. No screwdriver needed to make connections.

Uniform cleat edges and perfect drive cleats free of ripples.

Write for information and prices.

R. E. SMITH

1513 MONROE STREET, WAUKEGAN, ILLINOIS

transportation. Each government agency makes up its own schedule of requirements but must submit its schedules to Wampler's requirement committee for review and final recommendation. From Wampler's group, ("the CMP's Joint Chiefs of Staff, who pass on supply, and demand; and who must make the program bring everything into balance and prevent clashes between programs, and to the other assignments given it by NPA"), the recommendations go to the highest CMP echelon for final determination.

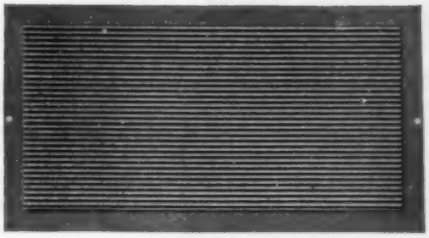
The 19 agencies under DPA, designated as claimants, are: NPA (farm machinery), Department of Defense (Army, Navy, Air Force), Atomic Energy Commission, Civil Defense Administration (federal, state and local needs), Federal Security Agency, (for schools, libraries, etc.), General Services Administration (for government housekeeping), Veterans Administration (for hospitals), Housing and Home Finance Agency (all housing except military), Agriculture Department (farm production, etc.), Interior Department (for solid fuels and power, minerals, metals), Petroleum Administration for Defense (oil and gas), Defense Transportation (domestic transportation, storage, port facilities), Commerce Department (for merchant marine, highways, civil aviation), NPA (for items not otherwise assigned), Office of Civilian Requirements (miscellaneous state and local nonconstruction programs, private industrial facilities, state and local housekeeping functions, consumer goods, service trades), NPA Canadian Division (for Canadian programs), Economic Cooperation Administration, (for nonmilitary exports to ECA countries and for military defense assistance pact operations).

CMP has the usual government agony in getting started. Charles E. Wilson, defense mobilizer, and Eric Johnston, economic stabilizer, don't agree. Johnston, a real spellbinder, likes to talk things out; Wilson is terse, impatient and abrupt, and thinks talking things out is a nuisance. Commerce Secretary Sawyer, who loves to talk, and who now is the overall authority in charge of NPA, hates to surrender anything Commerce Department possesses. Interior Secretary Chapman, Agriculture Secretary Brannan, and General Services Administrator Larson, as well as the administrator of veterans affairs, and Housing and Home Finance Administrator Foley and Federal Security Administrator Ewing, each feel they have a vested interest in CMP and in DPA. None of them are willing to surrender their interests without a struggle.

Apparently they feel that DPA is a fifth wheel on the defense wagon, and they agree it should be abolished, but they disagree where its functions should go. Logic takes it to NPA. Administrator Fleischmann wants it. He now has 3,000 employees. WPB, earlier prototype of NPA and pioneer operator of CMP, had 20,000 employees. NPA thinks it can get along with 10,000; but fears CMP is a task that will make more personnel imperative. It now looks as though Wilson will get the overall supervision. Truman apparently agrees that Sawyer has too much power. Sawyer is inclined to lord

No Matter How You Look At It — This A-J GRILLE is Better!

(Illustration 70-B)

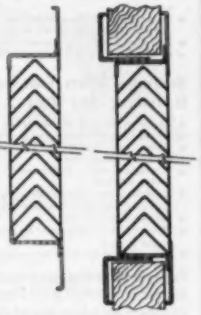


That's right. No matter how you look at it you'll agree this A-J No-Vision Door and Partition Grille is better. The following reasons tell the story.

Rigid construction: Louvers are made of aluminum and spaced on 1/3" centers securely welded in a steel flange frame.

Maximum free area: Free area (approximately) 70% variable.

Installation costs are cut: The exclusive telescoping A-J AUXILIARY FRAME assembly which slides over the core, permits an easy and attractive installation which presents the same appearance on either side thereby reducing expensive molding costs.



A-J Grilles, Registers and Diffusers are first choice for better design on almost any heating or air-conditioning job because of their high quality, low cost, ease of installation and precision workmanship.

Write for Our New Catalog — You'll find it most helpful and profitable!

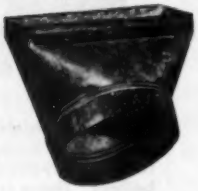
A-J MANUFACTURING COMPANY

2119 Washington St. Dept. D Kansas City 8, Missouri

No. 112 BOOT

No. 110 BOOT

No. 113 BOOT



No. 111 BOOT

← No. 164 End of Line Center Takeoff. For use with 2 No. 163.

No. 160 Takeoff Round Pipe to carry branch in or below joint. →

GRAY *"Snap-Rite"*

FURNACE PIPE AND FITTINGS

AIR CONDITIONING PIPE AND FITTINGS

A complete line of Gravity and Forced Air Pipe and Fittings with our positive "SNAP-RITE" Lock for quick assembly and erection. Wall Stack and Fittings in 3¼" standard depths. Trunk Pipe and Fittings in 8" standard depths.

Write for Catalog

GRAY METAL PRODUCTS, INC.

30 Carlton Street

Rochester 7, New York

SELL MORE • SELL FASTER •
SELL ECONOMICAL, EFFICIENT
HEATWAVE GAS FLOOR FURNACES
and make a friend with every sale.

Judge for Yourself! Heatwave Offers You:

- Bigger profits through faster turnover
- Warehousing facilities for better service
- Less inventory to carry
- The most complete line of floor furnaces on the market
- Recessed . . . factory installed . . . factory pre-set controls . . . which mean easier installation
- Interchangeable component parts for all units
- Only 25¾" overall height . . . fits into narrow space

Heatwave Offers Your Customers Everything They Want . . .

- Amazing low cost of installation and operation
- Combustion efficiency and economy
- Quiet . . . no "bangs" or "crackles"
- A size for every need
- Waves of heat . . . when and where wanted
- Precision-built thermostatic control . . . always a flow of fresh, clean, warm air
- Automatic Safety Pilot
- HEATWAVE is unaffected by electric power failure
- Zone heating for greater economy

10 YEAR GUARANTEE

The Modern Way of Heating Is Gravity, Zone, Gas Heating with HEATWAVE Floor Furnaces.
For Extra Profits Depend Upon HEATWAVE

"Years ahead in design and engineering . . . for simplicity of operation and economy."

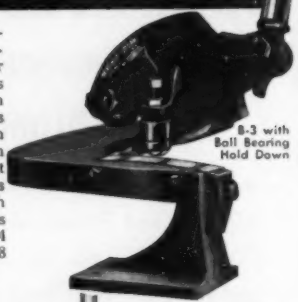
APPROVED A.G.A.

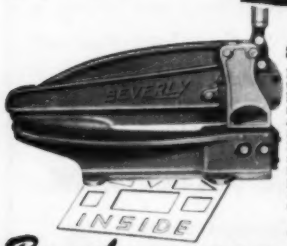
WRITE US TODAY FOR THE NAME OF YOUR NEAREST DISTRIBUTOR. SEND FOR THE FACTS

SOUTHWEST MANUFACTURING COMPANY
BOX 28AAY AURORA, MO.

BEVERLY SHEARS SAVE TIME · LABOR · MATERIAL

Make any cut—curved, straight or irregular, faster, easier and better with less material waste on a Beverly Throatless Shear. You can turn work to *any* position and make a clean cut as you go. Handles heavy gauges with ease—lighter metals without distortion. 4 models—capacities 18 gauge to 3/16" mild.





INSIDE SLOTTER
8" Reach—16 ga. capacity

Makes inside slotting cutting faster, easier, cleaner. Punch and die arrangement of 5 blades assures accuracy, clean cutting action. Cuts 2½" x 1/8" or 2½" x 1/16" slot at one stroke. Throat design permits pivoting work at any point in stroke for special inside cuts. Note sample cuts at left.

See your Beverly Dealer or write for illustrated catalog.

Beverly SHEAR MFG. CO.
3020 W. 111TH STREET • CHICAGO 43, ILLINOIS

it over the other members of the cabinet (who are heads of traditional old-line departments), because he has NPA. To equalize the situation, NPA is to be taken away from him, DPA is to be abolished, and Administrator Fleischmann is to be given far more powers. He will run NPA as a separate emergency agency under the general authority of Mobilizer Wilson. He will have much the same rank as Eric Johnston.

Open for Discussion—

(*From page* 90)

We smaller dealers who try not to lose touch with actual installations have to be continually on our toes to catch these changes which in some cases are merely an advantage to the manufacturer and prove to be a headache to the fellow who must meet the irate customer on the office carpet. If we small dealers have this trouble, what happens to the larger concerns who use transient labor and many makes of units?

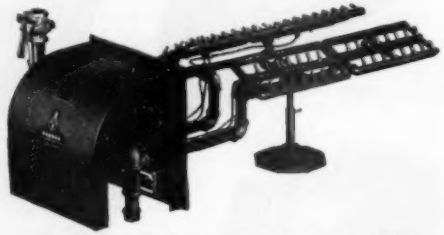
As I see it, the only answer to service is quality equipment, competent dealers to install this equipment at a fair price. The customer will pay gladly if he is sold quality, in the first place, by heating men, and not price by commission minded salesmen who sell heating today, shoes tomorrow, and insurance next week.

M. L. BAKER

Freeport Heating & Appliance Co.
Freeport, Ill.

BARBER BURNERS

For Over 30 Years the Outstanding Conversion Burner



No. 49-113-B Barber Automatic Burner Assembly

For dependability and efficiency, use Barber Gas Conversion Burners, made in sizes and capacities to fit all types of round or oblong furnaces and boilers. There is no comparison whatever between the average mixer-type gas burner and the Barber *Vacuum pre-mixture*, employing the famous patented Barber Impinged Jet. Equip your jobs with genuine Barber units.

Listed in A.G.A. Directory of Approved Appliances. Send for latest Catalog on conversion burners, all types of appliance burners, and controls.

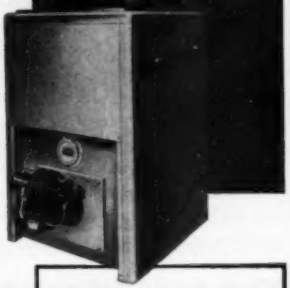
THE BARBER GAS BURNER CO.
3708 Superior Avenue Cleveland 14, Ohio

BARBER Automatic JET GAS BURNERS

it's

Open Season

for selling
oil heating equipment



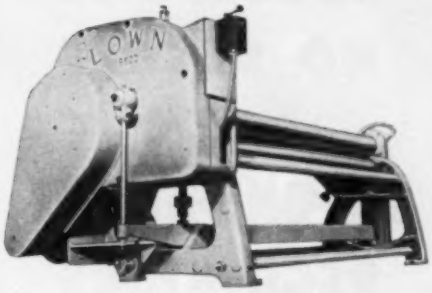
Now is the time to tie-in with Anchor . . . America's finest oil heating equipment. The product is right . . . the franchise is right . . . enabling you to make *more* sales, *easier* sales than ever before. Make this season an Anchor season . . . and bag *your* limit of oil heating profits. Write today for complete information.

ANCHOR

ANCHOR DIVISION
STRATTON & TERSTEGGE CO.
Incorporated
P. O. Box 311, Dept. A-7
New Albany, Indiana

Free Consumer Literature with your name. Attractive, 2-color literature for you to overprint with your firm name is available for you to distribute to your prospects.

LOWN SLIP ROLL
FORMING MACHINES



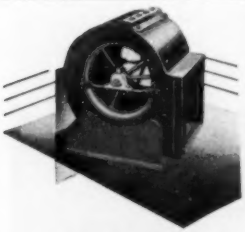
Model S-600 Series—6" diameter
A new improved, modern design, heavy duty machine engineered for durability, strength, and service.

- Initial Pinch Type-Power Driven.
- Rolls 6" diameter, all driven.
- Oilite Bearings. Alemite Lubrication.
- Roll Position Indicators.
- Available in lengths from 3 ft. to 12 ft.
- Silent Chain Drive.
- Built with Power Adjustment on rear roll and air cylinder attachment if desired.
- Fast sturdy and easy to operate.
- Prompt deliveries.
- Other size machines also available.

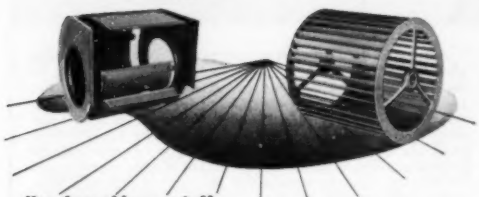
Dealers in Principal Cities — *Write for Bulletins*

San Angelo Foundry & Machine Company

SAN ANGELO, TEXAS — 1000 EAST UPTON



MASSACHUSETTS
AIR CONDITIONING
FURNACE BLOWERS
Designed for manufacturers of warm air furnaces and air conditioning equipment.
Wheel Sizes 7½" to 27"



Housing sides, cutoff plate and scroll sheet. Heavy gauge steel stampings.

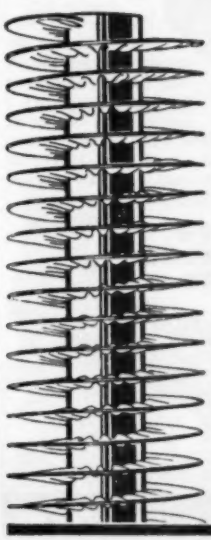
End spider suspension type wheel assembly.

Write for catalog

Manufacturers of centrifugal blowers for 36 years

MASSACHUSETTS BLOWER DIVISION
The BISHOP & BABCOCK Mfg. Co.
4901 HAMILTON AVENUE — CLEVELAND 14, OHIO

AEROFIN



FIN-TYPE COILS
For
Fast, Efficient
HEATING
and
COOLING

Write for Information

AEROFIN CORPORATION
S. Geddes St. Syracuse 4, N.Y.

Schweisheimer—

(*From page* 103)

condition throughout the experiment.

It's the Humidity

Whoever invented that old saying: it's not the heat, it's the humidity, — meaning the cause of unpleasant feelings, — knew perfectly well what he was talking about. In the removal of heat evaporation of moisture from the skin plays an important part. Combination of high temperature and high air humidity is uncomfortable because the humidity prevents skin evaporation as well as perspiration and does not allow the human body to release its surplus of heat through the natural ways.

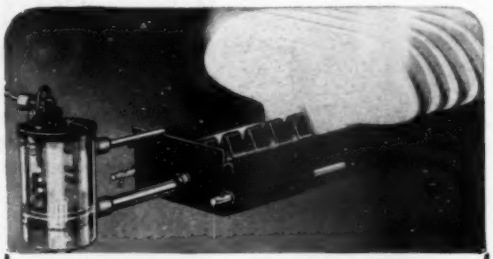
Profuse sweating takes large amounts of salt from the body. That is why salt tablets are given to restore the working capcity. However let's emphasize that the replacement of the lost liquid by drinking water is indispensable and cannot be replaced by anything else. Tea, both cold and iced, is a good thirst-quencher. Alcoholic beverages are best avoided during the day; they produce more heat in the body.

Where are You Working: in New York or Arizona?

There is a great difference between working in Arizona or in New York during the summer.

The workingman's chance of escaping sunstroke and heat exhaustion hinges greatly on what part of the country he lives in. If he is in Arizona, he is 28 times more

A "Double Feature"
BURNER
The Siemon Gas Burner is an extremely efficient heavy duty burner, which can be installed as a straight gas burner or in combination with an oil burner, or oil can be added later. Maximum dependability and economy — completely automatic.
Siemon
Combi-Matic
BURNER
NEW
CONVERSION
BURNER
A conversion burner with many new features at an economical price offering maximum efficiency.
WRITE FOR LITERATURE AND DETAILS
SIEMON & CO., 1819 Holmes St., Kansas City, Mo.



A reliable humidifier is an essential to healthful heating, and also a fuel saver because room temperatures can be kept slightly lower without loss of comfort. For efficiency, ease of installation, and dependable performance, use Monmouth Humidifiers. Monmouth principles of design have always been highly regarded by heating experts. We have *the* complete line for all purposes: Flotrol models both standard and small size (with the famous Flotrol control valve), also the economical Micro-Feed drip-feed unit, and the Monmouth gas-fired Humidity Conditioner for all radiator systems. You can easily profit by pushing the sale of these accessories on old or new heating jobs. Full information on request.

THE CLEVELAND HUMIDIFIER CO.

7802 Wade Park Avenue — Cleveland 3, Ohio

MONMOUTH HUMIDIFIERS

Midco Register Corp.
1059 Grand Ave.
St. Paul, Minn.

GET IT FROM
TRADE MARK
YOUR JOBBER

Registers — Grilles — Floor Faces — Floor Registers — Gravity Registers. The complete quality line for all winter and summer air conditioning.

Performance Plus !
ATH-A-NOR
Coal - Gas - Oil
FURNACES
and PARTS

JOHN L. SULLIVAN became the world's heavyweight champion in 1889 by knocking out Jake Kilrain after 75 rounds of bare knuckle fighting.

THE PERFORMANCE PLUS of ATH-A-NOR has been proven thousands of times every year for a half century. Be sure of Higher profits—Be sure of complete customer satisfaction — you can with ATH-A-NOR—it gives more— Write or wire for details.

MAY-FIEBEGER COMPANY
MANUFACTURERS OF QUALITY HEATING EQUIPMENT FOR OVER 50 YEARS
Newark Ohio

Specialists in Elbow Bending

CONDUCTOR PIPE ELBOWS and SHOES

- ALL SIZES
- ALL ANGLES
- ALL GAUGES
- ALL METALS

See Your Jobber
THE
CINCINNATI ELBOW CO.
2021 Eastern Ave.
Cincinnati 2, Ohio

PROFIT NOW!
WITH
GRAND RAPIDS FURNACE CLEANERS

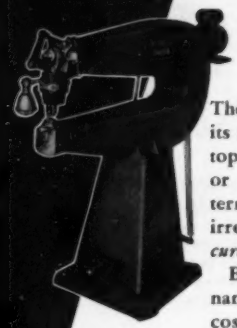
It's easy to get a lion's share of furnace cleaning profits when you use a Grand Rapids Furnace Cleaner. Greater cleaning capacity, handling ease and practically designed groups of furnace cleaning attachments help you give better service and clean more furnaces per day at a higher profit.

Act now! Write today for complete information and prices.

DOYLE VACUUM CLEANER CO.
227 Stevens St., S.W. Grand Rapids 7, Michigan

Libert Hi-Speed SHEAR

CIRCLE CUTTING ATTACHMENT Included as STANDARD EQUIPMENT with this Machine



- **SIMPLIFIES Maintenance**
- **SPEEDS Production**
- **SAVES Manpower**

The *Libert* has amply proved its advantages by turning out top production—shearing flat or formed sheet metal, internal or external, plain or irregular shapes *rapidly, accurately, cleanly!*

Equally effective in maintenance work, *Libert* is cutting costs to rock bottom. Edges are smooth, need no finishing. Unskilled operators produce accurate work at once.

MODEL 1236
36-in. throat
12-gauge capacity.

WRITE FOR BULLETIN

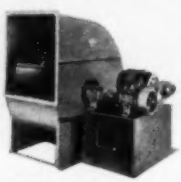
Sizes up to 60-in. throat, 10-gauge capacity.

LIBERT MACHINE COMPANY
Green Bay, Wisconsin

NOW MORE THAN EVER . . .

YOU NEED QUALITY

Bayley



When full production and utilization are so urgently needed as during the present emergency, breakdowns are particularly costly.

Bayley equipment provides the best insurance against shutdown hazards, because Bayley builds to maximum specifications, — at no extra cost in most cases. Owners benefit in the real savings of life-long dependability. Dealers and contractors benefit in customer satisfaction and reduced service costs.

Do your customer and yourself a big favor by making your next job a Bayley one.

Bayley

AIR HANDLING EQUIPMENT

Performs better, — longer

BAYLEY BLOWER COMPANY
6602 W. Burnham St. Milwaukee 14, Wis.

likely to fall a victim to it than a person working in New York, according to reliable statistics. Heat and sunstroke do not take their greatest toll in the Southern states, but in the East Central and West North Central States: Minnesota, Michigan, Wisconsin, Illinois, Ohio and Missouri, all of them so-called temperate states.

Here are some more statistical facts on heat. Men are three times more susceptible to heat stroke than women. Infants and the very old are easier victims. Contrary to a widespread belief Negroes are much more susceptible to heat than white people, two to six times more so. Working in a city is more exhausting than in rural districts on hot days.

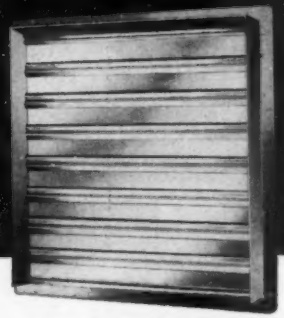
The worst period of the day is between 2 and 5 p.m. The second largest number of heat cases occurs between 7 and 10 p.m. Indoor temperature may continue high in spite of lowering temperature outside.

Heat reduces working efficiency. A. R. Smith stresses the point that far short of such extremes as heat cramps, heat exhaustion and heat stroke, are the ordinary feelings of lack of energy and drowsiness due to hot weather and reflected in diminished output and decreased efficiency.

Absenteeism Due to Sunburns

The connection of sunburns and absenteeism from work has been figured out by L. Stambovsky. While about 50 million people were employed in the United States during the war, at least half of them indulged in

they all want **AIR-FLO**



MODEL A-555

THE AUTOMATIC SHUTTER WITH ALL THE FEATURES

Front View—Closed

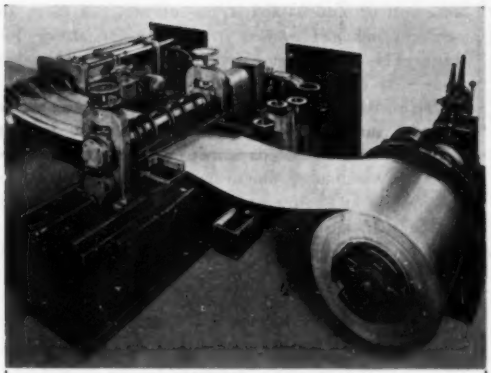
IT TAKES THE LOAD OFF THE FAN!

Aluminum louvers open fully, permitting capacity fan operation. New heavy reinforcement strip adds strength and long life to the louvers, assures quiet operation and perfect counterbalance, prevents rattling. Deep shroud protects shutter from high winds. Tie-rod, brackets and bearings inside frame, not exposed to weather. Special finish resists corrosion. Many other features.

Write for New Air-Flo Catalog 43-C

Illustrations and details of the complete Air-Flo line.

AIR CONDITIONING PRODUCTS CO.
2340 W. LAFAYETTE BLVD. · DETROIT 16, MICH.



". . . we're looking for slitting business, too!

Complete equipment for precision slitting and recoiling; also decoiling, roller leveling and cutting to lengths. METALS — 14 gauge or lighter — any width up to 36".

Write us for details . . . prompt attention is guaranteed.

"Made-Rite" Co., Inc.

Manufacturers & Suppliers
Furnaces — Pipe and Fittings

10th and Monroe St. **Newport, Ky.**

SCOTSMAN "Quality-Plus"

America's Finest Automatic Gas Heating!

✓ SAVES ON INSTALLATION COSTS!
✓ FITS ALL TYPES OF FURNACES!
✓ GIVES GREATER CUSTOMER SATISFACTION

CONVERSION BURNER

You're sure of complete customer satisfaction when you install a SCOTSMAN "Quality-Plus" Conversion Burner! "Quality-Plus" engineering gives you MORE powerful sales advantages!

LOOK AT THESE OUTSTANDING SALES ADVANTAGES!

▶ **SIMPLIFIED INSTALLATION!** Quickly installed at low cost in all types of furnaces. Requires no fire bricks or ceramics.
▶ **EVERY KNOWN SAFETY FEATURE!** Approved by American Gas Association. Automatic Safety Pilot Shut-Off, Constant Burning Pilot, "Even-Flo" Pressure Regulator.
▶ **COMPLETELY AUTOMATIC!** Equipped with Deluxe Minneapolis-Honeywell Modulating Thermostat Control.
▶ **ADAPTABLE TO MOST ALL TYPES OF DOMESTIC FURNACES!** Engineered to operate at peak efficiency in either warm air or hot water furnaces.

LET US PROVE THAT SCOTSMAN SELLS EASIER—WRITE TODAY

AMERICAN GAS MACHINE CO. • Albert Lea, Minnesota

NEW STANDFORATED

"BEND-EZY"

FORCED AIR REGISTERS and GRILLES

Smartly Styled . . . Efficiently Designed for Sidewall and Baseboard Installations

Illustrates how easy it is to set the bars with a "Bend-Ezy" tool. SINGLE DAMPER REGISTERS with bendable bars

The Standforated "Bend-Ezy" sidewall registers are stamped from sheet metal and have horizontal bendable bars, set at time of fabrication for 30 degree downward deflection. Each bar can be easily readjusted with a "Bend-Ezy" tool to any angle for upward, downward or straight flow.

Write for NEW Catalogue—
Contains complete information—fully illustrated

- **FLOOR REGISTERS, One-piece frame construction.**
- **GRAVITY BASEBOARD REGISTERS**
- **COLD AIR FACES**
- **PERFORATED METALS FOR EVERY INDUSTRIAL USE**

PROMPT DELIVERIES

Standard Stamping & Perforating Co.

3137 WEST 49th PLACE • CHICAGO 32, ILLINOIS

It's Harvest Time For Red Streak Service

NOW is the time to stress furnace cleaning with the Super Red Streak. It brings you added income in two ways. You make more profit on furnace cleaning. You beat your competitors to replacement and repair jobs by uncovering them before the plant goes into winter operation.

All kinds of heating plants can be cleaned the Super way. Suction tube scrapers are available for fire tube boilers. The Super Oil Soot Filter Bag may be obtained at nominal extra cost.

Try a Super 5 days free. Keep what you make. Our Super Plan Book tells you how to start and operate a furnace cleaning department. Ask your supply dealer or write.

National Super Service Company, Inc.
1944 N. 13th St., Toledo 2, Ohio

SUPER SUCTION

SINCE 1911
"THE DRAFT HORSE OF POWER SUCTION CLEANERS"

for heating
COMFORT
under
ALL Conditions . . .
Specify
Hammel
COMFORTAIRE
Winter Air Conditioner
For homeowners who care, here is the newest and finest in forced air. Gas fired and fully automatic combining maximum heating efficiency and free-flow ventilation.
Perfect for any plan . . . for closet, small recess, basement or service porch.
CIRCULAIRE
The finest built-in single and dual outlet wall heater that is first in the field for assuring satisfaction and continuing goodwill. Six models ranging in capacity from 11,500 to 50,000 BTU . . . designed to fit into any standard 4" stud wall without framing. Also available upon order for installation in 6" stud wall.
Hammel
RADIATOR ENGINEERING CO.
Owned and Operated by A. S. Martinson and Associates
3348 Motor Ave Los Angeles 34
Write or phone for complete information

some sort or outdoor activity in summer. Of these, 50 per cent indulged in sun irradiations too strong for them. This resulted in 15 million burns, in all degrees from mild discomfort to hospitalization.

Half of these 15 million sun injuries were sufficiently severe to cause the loss of one day's work. Industry lost about 7½ million man-days in one summer season, besides many man-hours due to impaired efficiency, change of schedules by absentees etc. A review of Monday and Tuesday absenteeism during June, July and August, Stambovsky says, showed that the worker's efficiency was at least decreased for one or more days.

The tanning of the skin which follows exposure to sunlight is preceded by redness and sometimes by swelling and blistering. The pain is severe, contact with clothing is most unpleasant, belts or suspenders are unbearable. Shock, chills, fever, nausea are signs of severe sunburns. The use of an efficient sunburn preventive, an ointment or cream or lotion, is the best way of avoiding sunburns.

We have to differentiate between the effects of the sun and those of heat on the human body. Prolonged exposure of the uncovered head to sun rays may produce a real sunstroke. The face is flushed, there are attacks of giddiness, violent headache, vomiting, the man may suddenly fall unconscious like felled by a stroke. This is a dangerous stage.

Heat stroke, on the other side, is due to general overheating of the body. It has been shown that in factories efficiency falls with rising inside temperatures, and in

SIMPLIFY YOUR BUYING!

You can save TIME by combining your orders for Conductor Pipe, Gutter, and Accessories with your orders for Galvanized Pipe, Fittings, Registers, and Cast Iron Furnace and Boiler Repairs.

ACT NOW! Your ordering will be easier, faster, and more economical when you buy in one large order

from

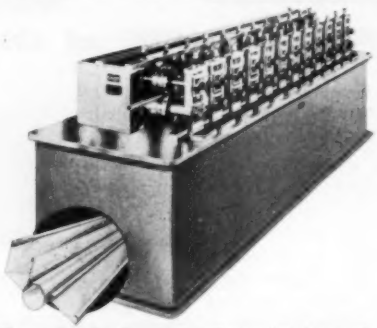
Iowa's Largest Heating Wholesaler

DES MOINES FURNACE AND STOVE REPAIR CO.

Des Moines, Iowa

COMPLETE IN ONE PASS!

—formed shapes of any design—



You merely feed the flat strip into the machine—out comes the finished shape.

- Production speeds up to 250 f.p.m.
- Machine shipped completely tooled.
- No experience required to operate.

Sketch or sample will bring prompt proposal

Dahlstrom Machine Works, Inc.

4974 N. Elston Ave. Chicago 30, Ill.

Roll Forming, Slitting, Straightening, and Cut-Off Machines

Get in the OIL business now

INVESTIGATE THE

XXth CENTURY ZEPH-AIR OIL FURNACE

COMPLETELY AUTOMATIC

BACKED BY A 20-YEAR WARRANTY

When you get in the oil business get in it RIGHT. Sell your clients the best in oil furnaces. . . . XXth Century's Zeph-Air. It's designed to provide the maximum amount of heat from primary CAST IRON heating surfaces, evenly and under full control. It has the modern look and requires less than eleven square feet of floor surface. Low upkeep is assured by exact engineering and the finest in workmanship and materials.

You'll be glad you investigated the Zeph-Air. Drop us a line today for more complete information.

XXth CENTURY
Heating & Ventilating
COMPANY
AKRON, OHIO

How to promote greater PER-MAN productivity!

Well-ventilated working environments contribute to faster, better defense production.

Western Rotary Turbine Ventilators provide constant, round-the-clock exhaust *without* power. A 2-mph breeze keeps your Western Rotary System in operation. Lifetime guaranteed bearings are both mounted on the same axis . . . always stay in alignment. Throat sizes 6" through 48", with the clean, low silhouette progressive industry demands.

Complete, up-to-the-minute information, sizes, capacities, and prices on all Western equipment upon request. In 1951 SWEETS and A.E.C.

IN STOCK WITH YOUR FAVORITE WHOLESALER

"ALWAYS ON THE JOB — NEVER ON THE PAYROLL"

WESTERN ENGINEERING & MFG. CO.
1726-28 E. WASHINGTON BLVD., LOS ANGELES 21, CALIF.

GO-EZE
(Formerly Goose)

THE ORIGINAL TIME SAVER DAMPER CONTROL

(Patented)

Try the new package. For the convenience of the sheet metal trade 3 gross in carton bulk all packed separately—also packaged.

Write us for new prices to the wholesale and dealer trade.

SEVERSON MANUFACTURING & SUPPLY CO.
1034 W. Somer St. Milwaukee 5, Wis.

WE ROLL RINGS

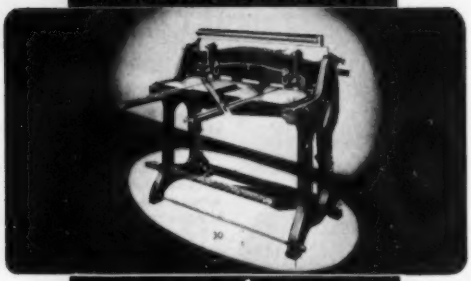
Expertly Rolled to your specific requirements,—also Channels, Tees, Flats, Rounds, Pipe and Tube—correctly rolled to a true circle. Used in joining pipe or smoke stacks sections; reinforcing tanks, vats, drums, guards etc.; bases for fans and hundreds of other installations.

Write for our list of stock sizes and discounts. Our circular, describing our angle rings and fabricating services is yours for the asking.

Phone Bishop 7-4255

NATIONAL METAL FABRICATORS
2140 SO. SAWYER AVE., CHICAGO 23, ILL.

WHITNEY METAL
TOOL COMPANY
41 YEARS EXPERIENCE



WHITNEY-JENSEN
No. 30 SQUARING SHEAR

A small, moderately-priced, accurate foot shear that will handle the majority of work in many shops. Has all standard fittings plus added optional feature of a fluorescent light over the blades to aid close work. Length of cut — 36".

Capacity, Mild Steel — 18 ga.

WHITNEY METAL TOOL COMPANY
91 FORBES STREET, ROCKFORD, ILLINOIS

hot industries (such as metal heating processes) the industrial output is higher in winter than in the summer months. In a tin-plate factory, production in the hottest months of the season was ten per cent lower than in the coldest months of the year. In an ill-ventilated factory the decline in output was 30 per cent.

Observations by Taylor and his associates on workers exposed to industrial heat exhaustion showed that rest, food and water were sufficient to restore all men so that they even could continue to work in the heat for hours. The conclusion was that heat exhaustion and ability to work in the heat are almost wholly dependent on the function of the heart and the blood vessels. Moderate intake of salt and plenty of water are necessary to keep this function intact.

Everyday Methods of Keeping Cool

Light, easily digested food in moderate amounts will help to keep the body temperature down on hot days. Fruits, vegetables, salads are appropriate during a heat wave, and only little fat (butter, lard).

But why less protein? Protein-containing foods are meat, eggs, cheese vegetables, etc. The statement that the specific dynamic action of protein is greater than that of carbohydrates (bread, sugar, rice, potatoes, flour etc.) and fats (butter, margarine, lard, meat-fat), and that, therefore, we should eat less protein in hot weather, has been disproved by Forbes and Swift. Workers who have physical exertion on hot days, need their normal three meals a day.

MAKING FITTINGS
COSTS *YOU* MONEY

We can make fittings faster than you can! Here at Youngstown we are geared to volume production of quality fittings. Our high speed machinery turns out Youngstown precision fittings at a cost that means profits to you.

Almost every type of fitting to complete a great variety of furnace installations can be found in the Youngstown catalog. Call your local jobber today. For special assistance or information write directly to us. . . .

YOUNGSTOWN FURNACE CO.

627 Marshall Street Youngstown, Ohio

Convert Gravity Furnaces With A
CIRCULATAIRE Bonnet Blower

CIRCULATAIRE ELIMINATES COLD ROOMS, BALANCES HEAT DISTRIBUTION, SAVES FUEL

CIRCULATAIRE solves the problem of "hard to heat" rooms, boosts warm air quickly through all the heating pipes. CIRCULATAIRE is easily and quickly installed without removing the bonnet. Packaged unit includes motor and fan control. No new sheet metal work required, no changing of cold or warm air pipes, no baffles to be built. The CIRCULATAIRE is rigid, quiet and efficient in operation.

NOW READY — New CIRCULATAIRE Sales Aids add effectiveness to selling interview, conserves valuable selling time and increases sales.

A COMPLETELY PACKAGED UNIT
Nothing for the dealer to furnish except limited amount of labor.

GET THE FACTS TODAY! WRITE...
CIRCULATAIRE DIVISION OF CORLETT-TURNER CO.
1001 S. KOSTNER AVE., CHICAGO 24

Am-Pe-Co SINCE 1929

"Unipack" Furnace Blower

"DOC" (WITH THOUSANDS OF SATISFIED CUSTOMERS) SAYS:

Quiet as a CAT'S PURR"

FIRST furnace blower made commercially in the Middle West. . . . TWENTY years of service in thousands of homes . . . continuing demand is PROOF of PREFERENCE for QUIETER operation.

It's the operation that counts in a blower. Rugged operation that's "Quiet as a Cat's Purr" and long life are assured when you install the UNIPACK.

AMERICAN MACHINE PRODUCTS CO.

MARSHALLTOWN, IOWA

Instant-Glo

CUSTOM-BUILT INSULATING BRICK

COMBUSTION CHAMBER

The Top Quality Installation for Maximum Efficiency

INSTANT-GLO Combustion Chambers are made of SPECIAL REFRACTORY INSULATING BRICKS which get hot 10 times faster than ordinary fire bricks insuring an INSTANT RED-HOT REFRACTORY SURFACE, resulting in immediate combustion efficiency—result, oil economy 15% greater than ordinary chambers. The insulating quality of the bricks also ELIMINATES LOSS OF HEAT into bare of heater. The round shape of INSTANT-GLO Chambers eliminates air pockets and produces LESS COMBUSTION NOISE than the usual fire brick chambers. Each part is taper cut like a key stone so that chamber can not fall in. The INSTANT-GLO Chamber can be installed in one hour or less. All components of each chamber carefully packed in special carton—NO BREAKAGE OR LOSS.

No. 1 or 1A—1.00 to 1.35 G.P.H.
No. 2 or 2A—1.5 to 1.75 G.P.H.
No. 3—2.00 G.P.H.
Model 1A and 2A *(at right)* Special chambers for steel furnace installations.
Also Available — 2600° INSTANT-GLO CHAMBERS IF REQUIRED

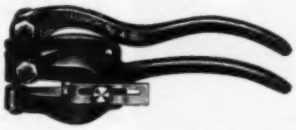
Write for Complete Information

Boston Machine Works Company

Manufacturers

Oil Heating Supplies Division, 7-17 Willow St., Lynn, Mass.

A REAL *Time Saver*



The No. 4B PUNCH by *Whitney*

This punch is accepted by leading contractors and dealers as a real time-saver in the shop and on the job. Men who use it every day know it can't be beat for clean, fast punching. Has a capacity of ¼" through 18 ga., weight 3 pounds, 8½" in length, depth of throat, 2". Complete tool includes three punches and three dies of specified sizes with die adjusting key.

WHITNEY MFG. CO.

636 RACE ST. ROCKFORD, ILL.

ONLY A FEW CHOICE EXCLUSIVE TERRITORIES STILL OPEN!

AGA Listed

DEALERS—MANUFACTURERS' AGENTS: Write for Information on this

FAST SELLING LINE OF

Reinhard **GAS CONVERSION BURNERS!**

The only gas conversion burner with the exclusive "AIR-LOCK" principle. Never a burner head or baffle plate replaced due to burning out. A complete line of domestic, industrial and commercial gas conversion burners. Write today for complete information.

MANUFACTURED SINCE 1932

The House of Reinhard

11 So. Ninth St. Minneapolis, Minn.

Better Burners Are Made — Reinhards Make Them

Majestic
FURNACES *plus* PLANNING SERVICE

MAJESTIC heating engineers will gladly assist you to plan and estimate warm air heating systems—on the smallest to the largest jobs—to assure efficient, uniform floor-to-ceiling heat at low cost. You can rely on Majestic's 44 years of experience in heating developments, including the newest types of down-flow heating.

Wide variety of Majestic Furnaces—all sizes

This complete Majestic line offers units for any warm air heating need. Many are ideal for *defense and public housing; slab or crawl space construction; perimeter and convection heating.*

Get the benefits of this service on your defense and government housing projects that require low-cost, efficient heating.

Heating Specialists Since 1907

The Majestic Co.
394 Erie Street, Huntington, Indiana

Our heating engineers are ready to help you • Write

This Is GALVAN!

the best obtainable in

- **CRARY'S cut offs!**
- **CONDUCTOR elbows!**
- **TITE-TOP funnels!**

"Every fit a perfect fit"

WRITE TODAY
for the address of your nearest jobber

GALVAN Manufacturing Co.
New Albany, Indiana

Plant managers anxious to keep up production through the dog days would do well to supply milk, fruit and fruit juices for extra between-meal pick-ups to their workers, according to a suggestion by A. R. Smith plant cafeterias should see to it that these foods are plentifully available.

Loose, thin, non-constricting clothes are useful, open at the neck both during and after work so that body vapors can escape easily. White and yellow color of clothes is best to reflect and keep off the sun's rays.

Some people feel refreshed after a warm bath or a warm shower during the hottest part of the day, followed by a hot drink, tea or lemonade. This sounds strange, but the warm bath opens the pores of the skin so that the heat can be given off rapidly by the body.

Most people, however, prefer cold showers and cold drinks for cooling off. Holding the wrists under running cold water is extremely refreshing though its effects do not last too long. Another helpful measure are light movements of the forearms and elbows in a basin with cool water.

Factors that help men to endure high temperatures are: shade; breeze sufficient to keep the skin dry; no clothing if already shaded; acclimatization to heat; plenty of water and some salt; physical fitness; adequate sleep.

Factors known to threaten endurance are radiation; heavy or impermeable clothing; heavy work; alcohol; diarrhea or vomiting; lack of appetite for food; wounds or infections.

Self-Tapping Screws Hold Better!

•

Use These STAINLESS STEEL SCREWS

Available in Standard Diameters and Lengths Types A or Z

Round • Pan • Stove
Flat and Oval Heads

Slotted or Phillips Recessed Heads

All Types of STAINLESS RIVETS Available, too

PROMPT DELIVERY

SEND, ON YOUR LETTERHEAD, FOR CATALOG 49J.

STAINLESS STEEL FASTENERS

MANUFACTURERS SINCE 1929
ALLMETAL
Screw Products Co., Inc.
33 GREENE STREET, NEW YORK 13, N. Y.

PIPE AND FITTINGS GUARANTEED QUALITY!

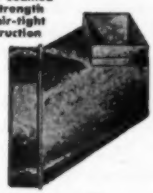
All Ajax fittings are made of high-grade, full gauge sheets . . . no seconds used! Quality is fully guaranteed. Your order, large or small, receives prompt, personal attention.

Scientifically designed to reduce air friction

For help on your heating problems our engineering department is at your service. Contact us . . . we'll gladly work with you.

Write for catalog of Furnace Fittings.

Double seamed for strength and air-tight construction



Ajax Furnace Fitting Co.

Division of

The Cincinnati Sheet Metal & Roofing Co.

216-20 E. FRONT ST. CINCINNATI, OHIO

KO-Z-AIRE

Advance Design

GAS AND OIL FIRED

WINTER AIR CONDITIONERS

and

GRAVITY WARM AIR FURNACES

- More than 30 models . . . All Fully Automatic
- Most Units Shipped Completely Assembled and Wired
- Wide range of unit sizes, ratings, prices
- Ratings from 70,000 to 450,000 BTU Input

A complete line including Counterflow Units and Gas Conversion Burner. A size for every home on your prospect list. Write today for details to Dept. AA-7.

KO-Z-AIRE, Incorporated

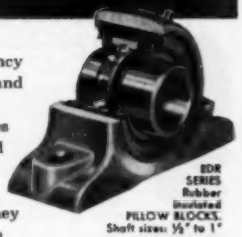
Factory, Sales and General Offices — Red Oak, Iowa

Factory Representatives in Principal Cities

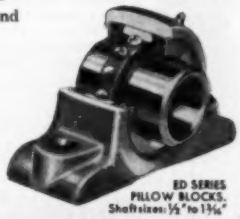
FOR INSTALLATIONS THAT STAY...

SMOOTH and SILENT

Insure years of silent efficiency from your air conditioning and blower installations with Ahlberg ED and EDR Series Pillow Blocks. Designed and manufactured by a staff long famous for industrial precision and ruggedness, they combine these qualities with compactness, light weight and low cost. For power installations that *stay right*, insist on Ahlbergs. Write for catalog today.



EDR SERIES Rubber Insulated PILLOW BLOCKS. Shaft sizes: ½" to 1"



ED SERIES PILLOW BLOCKS. Shaft sizes: ½" to 1 3/16"

AHLBERG BEARING COMPANY

3025 W. 47th Street

Chicago 32, Ill.

AHLBERG *PRECISION*EERED

Anti-Friction Products Since 1908

FRIGID
Fans FOR
peak performance,
maximum efficiency
AND ECONOMY
FRIGID
You can depend on 'Frigid' Fans for the best in ventilation. A complete line including Attic Fans, Pedestal, Wall and Ceiling Fans, Electrically Reversible Window Fans, Hassock Fans, Blowers, Shutters, Exhaust Fans, etc.

Write for literature.

CIRCULATORS & DEVICES MFG. CORP.

128-168 THIRTY-SECOND STREET · BROOKLYN 32, N. Y.

...here are the reasons why

Grant Wilson
DUX-SULATION
ASBESTOS PROTECTED

is BEST FOR DUCT INSULATION

1 High thermal and acoustical insulating properties...K factor of .27 BTU and sound absorption approximately 61%. Integral, woven asbestos membrane.

2 Easy to handle, easy to install correctly, can't be crushed or cracked, springs back to original thickness if compressed. Supplied with special glue and tape, no "fasteners" needed.

3 Constant insulating values. Can't "powder", shift or sift; no thin spots, even at corners. No deterioration of any kind, no change of any kind.

4 Perfect adhesion, flexible, conforms to uneven surfaces. Can be installed in the shop and still withstand all necessary handling. Specifically engineered for duct application ONLY!

Inspect Dux-Sulation yourself!
Write Grant Wilson, Inc. 141 West Jackson Blvd., Dept. A Chicago 4, Illinois.

Grant Wilson inc.

IN NEW YORK CITY: Air Conditioning Utilities Co., 8 West 40th Street, New York 18, N. Y., LOngacre 3-4280.
IN CANADA: Atlas Asbestos Co., Ltd., Montreal, Toronto, Winnipeg, Vancouver.

KIRK-BLUM

...one piece BLOW PIPE ELBOW SAVES YOU MONEY

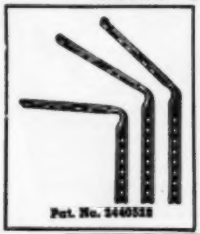
- HOODS
- BALL JOINTS
- FLOOR SWEEPS • BLAST GATES
- STAMPED AND ROLLED ANGLE RINGS

Cheaper and stronger than the ordinary pieced elbow, KIRK & BLUM'S One-Piece Elbows are rolled into a lock-seamed tube, then crimped on an exclusive machine to form a super tight, rigid elbow. These and other blow pipe parts, made in production quantities, are superior, cost less than the ordinary kind. Made in light to heavy gauges, from 3-inch to 14-inch diameter. Write for literature and prices.

Ball Joints Any Size

THE KIRK & BLUM MANUFACTURING CO.
3180 FORRER ST. • CINCINNATI 9, OHIO

IMPROVED!



Pat. No. 2440538

• BB •
No. 12 SHANK
33⅓% STRONGER

IMPROVEMENT IS APPLIED TO No. 15—SQUARE, No. 19—⅛ PITCH, AND No. 25—¼ PITCH.

SOLD THRU LEADING JOBBERS EVERYWHERE

BERGER BROS. CO.
Main Office & Factory
229-237 Arch St., Philadelphia, Pa.

To avoid unnecessary discomfort from heat, keep placid.

If you feel like quarrelling or getting upset, wait a few months; winter is the proper time for it. Any mental excitement or physical agitation speeds up circulation of the blood and produces supplementary heat. There is no doubt that an interesting job helps to overcome the thought of heat and even to enjoy a heat wave. It distracts the thoughts, and the more we forget about the heat the easier it is for us to put up with it with a smile.

Reid—

(*From page* 104)

out into 12 equal spaces and through the points, draw lines perpendicular to the stretch-out line.

b) Transfer the lines marked *A, B, C, D, E, F, G* from the drawing to the corresponding lines on the layout as shown.

c) Through the points, draw the outline of the intersecting pipe.

To lay out the taper and true shape of the hole, the procedures will be as follows:

a) Draw the line marked *RAD—S.*

b) From the front view drawing, set a compass at distance *RAD—T.* With *RAD* point on line *RAD—S,* as center, draw a long arc.

c) From the front view drawing, set a compass at distance *RAD—U.* With *RAD* point on line *RAD—S,* as center, draw a long arc.

d) Find the required stretch-out for the large diameter

MOREY FLOAT VALVES
Made Right Priced Right

List Price 1.50

Packed in Dozen Lots

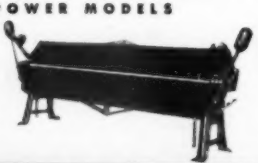
Morey Valves close against pressure. Each operation washes neoprene seat. ⅜" pipe thread outside, ⅛" inside. Brass body 2⅛"x3" copper float or 4"x5" oval float. The ideal float valve for evaporative coolers, poultry feeders, small cooling towers and evaporative condensers.

1500% Sales Increase in 1950 on Morey Valves
Write for trade discounts on
The Morey line of Recirculating Pumps, Cooler Pads, Float Valves, Special Woven Netting and Aspen Excelsior.

DAN MOREY
814 S. Robertson Blvd.
Los Angeles 35, California

CHICAGO STEEL BENDING BRAKES
HAND AND POWER MODELS

for Single and Quantity Runs
Bending Sheet Metal



PORTABLE HAND BRAKES
BOX and PAN BRAKES

DREIS & KRUMP MANUFACTURING COMPANY
CHICAGO
7404 S. Loomis Blvd., Chicago 36, Ill.

PENN-AIRE FURNACES

Winter Air Conditioning and Gravity

CAST IRON, COAL FIRED

Popular Price — Practical Design

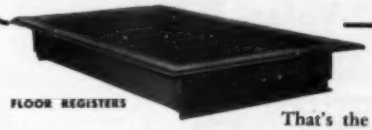
Economical Operation

UNION MANUFACTURING CO. INC.
Boyertown, Pa.

REGISTERS BY

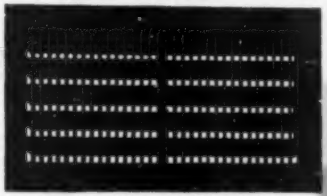
ROCK ISLAND

. . . AND THE JOB IS COMPLETE!



FLOOR REGISTERS

That's the truth, too! Rock Island registers add the final touch to a perfect installation. They'll harmonize with any architectural arrangement whether in a small family home or a large building. Try the floor register on gravity installations or the forced air register . . . either will prove Rock Island's superiority. Write us for details



FORCED AIR REGISTERS DESIGNED FOR SIDE-WALL AND BASEBOARD INSTALLATIONS

ROCK ISLAND REGISTER CO.
2435 Fifth Avenue — Rock Island, Illinois

MERCOID
Sensatherm

IT HAS WHAT YOU NEED IN A THERMOSTAT

It maintains a home in ideal comfort at any desired temperature.
It operates on a variation of ½° above or below the point set.
It is a corrosion-proof mercury switch contact equipped control.
It performs perfectly for years without any servicing attention.
It is a masterpiece in mechanical precision, design and appearance.

Complete catalog sent upon request

THE MERCOID CORPORATION, 4201 BELMONT AVE., CHICAGO 41, ILL.
Manufacturers of dependable automatic controls for a quarter of a century

MORE HEAT FOR YOUR DOLLAR
WITH JOHNSON BENCH SOLDERING FURNACES

1800°F. without forced air blast.

No. 101 Bench Furnace

The most efficient, powerful and economical bench furnace made for heating soldering coppers up to 12 lbs. per pair. Also used for heat treating, case hardening, and annealing carbon steels. Two burners. Firebox 3¾ x 4½ x 5½. Complete with work rest block and baffle plate. $18.80 F.O.B. factory.

No. 118 Combination Bench Furnace

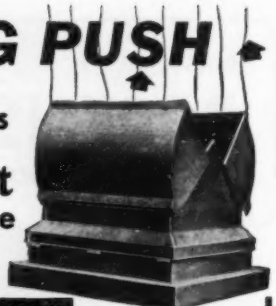
For heating largest soldering coppers, stenciling irons, branding irons, etc.; heat treating carbon steels, and soft metal melting. Lid on hood is removable for inserting 22 lb. pot for melting lead, tin, babbitt, etc. Two burners. Firebox 6¼ x 5 x 6½. Complete with pot. $35.00 F.O.B. factory.

WRITE FOR FREE LITERATURE

JOHNSON GAS APPLIANCE CO.
580 E AVENUE N.W. CEDAR RAPIDS, IOWA

give a **BIG PUSH** to your Ventilator sales with **Swartwout Ject-O-Valve**

profitable, powerful roof ventilator



THE SWARTWOUT COMPANY
18513 Euclid Ave., Cleveland 12, Ohio
Patented

by multiplying the *LD* diameter by 3.14 and from point *S* on radius *RAD—T*, mark off the tabulated distance around the arc (note: distance *SS* is for half pattern). From the tabulated point, draw a line to the point marked *RAD*.

e) Establish the center line.

f) With the distances *RAD—P*^{1}; *RAD—N*^{1}; *RAD—M*^{1}; *RAD—L*^{1}; *RAD—K*^{1}; *RAD—J*^{1}; *RAD—H*^{1}; on the front view as radii, draw corresponding arcs on the layout extending on both sides of center line.

g) From the end view, transfer distances marked *1*, *2*, *3*, *4*, *5* to the corresponding arcs on the layout.

h) Draw the outline of the hole to be cut in the taper.

Make allowances for required seams and joints, and form patterns to required shape.

Seel—

(*From page* 109)

90 deg. The raw edge is slipped into place and the seam secured with rivets or sheet metal screws.

Sometimes when heavier metal is fabricated corner seams are made by locating angle iron in the corners and riveting the sheets to the angles. Fig. 45. A frequent practice is to make two sides wider and dress them over to provide an edge.

A corner seam known as the double lap corner is used for greater rigidity than a single lap would provide. It can be spotwelded, riveted or fastened with sheet metal screws.

MILTON SHEET METAL MACHINERY SPECIALISTS

STOCK DELIVERY ON PEXTO, CHICAGO BRAKES, DIACRO, ROUSSELLE PRESSES, KIDDER, WHITNEY, ROTEX PUNCHES, REX WELDERS

WE CARRY A COMPLETE STOCK OF NEW & USED HAND & POWER MACHINERY.

WE STOCK PUNCHES & DIES & ADAPTERS FOR ALL PRESSES & BRAKES, SHEAR BLADES & SPOT WELDER-TIPS & HAND TOOLS.

MILTON EQUIPMENT COMPANY

N.E. COR. 4th & Race St. - Phila. 6, Pa.
WAlnut 2-1734

Elgo Ventilating Specialties

YOU CAN'T BEAT THIS AUTOMATIC SHUTTER

An automatic shutter that not only opens more quickly but also closes more tightly. Completely weather-stripped to make a snug, tight fit. And its louvers have special felt silencing pads. Noted also for absence of blade flutter. Sizes from 8" to 72" square—also rectangular.

Write for circular and prices

"ELGO" TYPE AUTOMATIC SHUTTER Front View (Open)

ELGO SHUTTER & MANUFACTURING CO.
2738 W. Warren Detroit 8, Mich.

Free CATALOG

SAMPLES FREE
SODER STAINLESS STEEL RAPIDLY

FLUXES
SODERING
BRAZING & WELDING
L. B. ALLEN CO. INC. Chicago 31, Ill.

ORNAMENTS

STAMPINGS & SPINNINGS

Zinc Ornaments Available From Stock. Copper, brass, bronze, aluminum and stainless steel ornaments made up promptly.

If you don't have catalog K, send for it NOW.

MILLER & DOING
89 ADAMS STREET BROOKLYN, N. Y.

Sheet Metal Machinery
Pittsburgh Lock Machines
Stovepipe and Elbow Machines
Roll Forming Machinery and Dies

Maplewood Machinery Co.
2634 Fullerton Avenue
Chicago, Ill.

MANUFACTURERS OF

FURNACE PIPE AND FITTINGS,

Prefabricated Ducts,

also conductor pipe, eaves trough, drip edge, rake strip, etc.

THOR METAL PRODUCTS CO., INC.

Box 118 Eastwood Station Syracuse, N. Y.

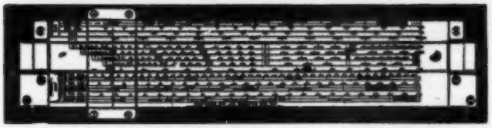
DON'T JUST BAFFLE! GET SWIRLING ACTION TOO-

It pays to include a FIRE-SWIRL with every conversion.

Get the facts, clip this to your letter head.

Pat. Applied For

FIRE-SWIRL ZEH COMPANY INC., PASSAIC, N.J.



Designed Primarily for Residential Heat Loss Calculations.

CLIMATEMAKER HEAT LOSS CALCULATING **SLIDE RULE**

Gives the RIGHT Answers QUICKLY to:

★ B.T.U. heat loss per room. ★ C.F.M. required per room. ★ Pipe area, pipe and stack size for forced or gravity warm air heating. ★ E.D.R. of steam and hot water. ★ Blower size. ★ Figures outside design temperatures from 40 Below to 40 Above zero. Designs based on zero to 70°.

Easy to learn—Simple to use. Copyrighted in U.S.A. and Canada.

PRICE Cash With Order $15.00

ORDER NOW— Write Dept. AA-7

CLIMATEMAKER SLIDE RULE COMPANY, Not Inc.

1404 E. Washington St. Bloomington, Ill.

How you can speed up your Work —without an 8' or 10' Square Shear

ALMAR EASY SLITTER

FOR USE WITH BRAKE OR BENCH

The Rotary action of cutters produces a neat, accurate clean edge.

PRICE—COMPLETE

Almar Easy Slitter

with cutting head & track

8'	Brake Type	$75.00
8'	Bench Type	$85.00
10'	Brake Type	$85.00
10'	Bench Type	$95.00

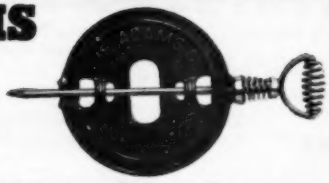
F.O.B.—Chicago, Ill.

WARD MACHINERY CO.

564 W. WASHINGTON BLVD CHICAGO 6, ILLINOIS

ADAMS

Sizes from 3 to 18 inches



Diamond Smoke Pipe Damper

Buy Adams Known Quality

THE ADAMS COMPANY

Bridge Street • Established 1883 • Dubuque, Iowa

Copper - Brass - Bronze

Perforated

TO YOUR REQUIREMENTS

PERFORATED METALS

FOR ALL INDUSTRIAL USES

ARCHITECTURAL GRILLES

SEND FOR CATALOG #35

DIAMOND MFG. CO.

BOX 34 WYOMING, PA.

FOR BETTER FIRES

IRON-HIDE

CHAMBERS-BAFFLES-SUPPORTS

FURNACE MANUFACTURERS!

— ATTENTION —

LET US QUOTE ON A COMBUSTION CHAMBER FOR YOUR FURNACE.

IRON-HIDE REFRACTORIES, INC.

DOCK STREET MATAWAN, N. J.

BRAUER has

REPAIR PARTS for all FURNACES BOILERS, STOVES • *Guaranteed to* FIT

A. G. BRAUER Supply Co.

2100 Washington Ave. St. Louis, Mo.

SERVICE SECTION

SHEET METAL MACHINES & TOOLS

Lockformer Pittsburgh Machines
Lockformer Cleat Machines
Chicago Hand Brakes
Chicago Press Brakes
Pexto Power Shears
Pexto Foot Shears
Pexto Rotary Machines
Pexto Slip Rolls
Pexto Bar Folders
Smith Cleat Benders
Rex Spot Welders
Reed Power Rolls
Whitney Punches
Whitney Foot Presses
Whitney Mechanic's Tools
Pexto Mechanic's Tools
Van Dorn Electric Tools
Marshalltown Shears

When in Chicago, visit our Machinery Showroom

COMPLETE LINE OF SHEET METAL & VENTILATING SUPPLIES

CENTRAL-WEST MACHINERY CO.

335 SO. WESTERN AVE — HAYMARKET 1-8360 — CHICAGO 12, ILL.

ADJUSTABLE ELBOWS

Registers and Grilles
Deliveries from Stock

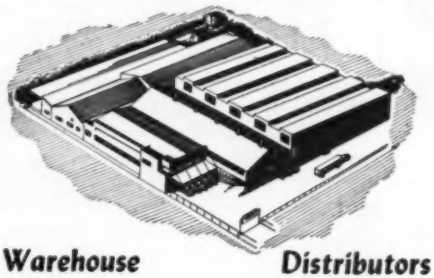
Juniper Elbow Co. Inc.

72-15 Metropolitan Ave.
Middle Village, L.I., N.Y.

GRAND RAPIDS FURNACE CLEANERS

Write for Details

DOYLE VACUUM CLEANER CO.
227 Stevens St., S.W.
Grand Rapids 7, Mich.



Warehouse *Distributors*

Serving the Roofing, Heating and Sheet Metal Trades

ALUMINUM: Sheets, Roofing, Valley, Nails, Insulation, Pipe, Trough, Gutter, Ridge, Fittings

Brass Slating Nails
Follansbee Seamless Terne Rolls
Eraydo Copper Alloyed Zinc Rolls, Sheets, Thru Wall Flashing
Metalworking Equipment
If you need it, we have it! Just give us a call!

POTTS-FARRINGTON CO.

FORMERLY W. F. POTTS, SONS & CO., INC.
4250 WISSAHICKON AVE., PHILADELPHIA 29
PHONE BAldwin 3-1000

Classified

Classified section: Rates are 10 cents for each word, including heading and address. One inch $5.00. Count seven words for keyed address. Minimum $2.00 for each insertion. Cash must accompany order.

for sale

SHEET METAL — HEATING and MANUFACTURING BUSINESS FOR SALE — Established over 50 years. Central Illinois County Seat town of 6000, doing business in territory of 25 mile radius with population of 100,000. Volume unlimited. New two story brick and block building with electric elevator. 9000 sq. ft. floor space. Large shop with GOOD modern equipment: Power Combination machine, Lock-Former, Unishear, Spot Welder, Kick Punch Press, 2 square shears, Bar Folder, brakes, electric drills, power saws, hand tools, bench tools, ladders & roofing tools, all in best condition. Three trucks and salesman car, A-1 condition. Large display room and offices. Paint spray booth and equipment on 2nd floor. $15,000 stock of furnaces, registers, fittings and supplies, gutters, spouting etc. Ample sheet stock. No Agents. Owner selling. Address Key #849, American Artisan, 6 No. Michigan Ave., Chicago 2.

wanted

WANTED: Shearings any amount — all sizes Galvanized, cold and hot rolled aluminum. Stainless and copper 6" minimum width 36" minimum length, uniform quantities. Gauges from 16 to 30 inclusive.

Write or wire

Los Angeles Sheet Metal Mfg. Co.
901-903 East 9th Street, Los Angeles 21, Calif.
Trinity 4715

situations open

WANTED: Traveling man under 40 thoroughly familiar with wholesale distribution of tinners', roofers' and furnace men's supplies Northwestern Ohio and Eastern Indiana territory. Recommendations required. Well established firm. Address P. O. Box 28, Columbus, Ohio.

SALES REPRESENTATIVE WANTED — Capable of selling our service to heating, air conditioning, and refrigeration trades. Also to national users of heating and refrigeration equipment. Long established mid-western firm. Repeat orders, commission basis, exclusive territories available. Very profitable for man able to handle this since it is a service to the trade very much in demand today. Address Key #841, American Artisan, 6 No. Michigan Ave., Chicago 2.

lines wanted

Manufacturers' Agent, with exclusive buying arrangement for large number (increasing constantly) of Warm Air Heating Dealers in Southern Illinois, wants to make connection with manufacturer of complete line of Coal, Gas and Oil-fired Furnaces. Address Key #850, American Artisan, 6 No. Michigan Ave., Chicago 2.

agents wanted

WANTED: Manufacturers Representatives to handle complete line of furnaces. This is one of the leading, old established manufacturers in the business. Preferred and protected territories open. Only qualified aggressive sales representatives wanted. Give full references and experience in reply. Address P. O. Box 5485, Cleveland 15, Ohio.

American Artisan SERVICE SECTION

Rates for display space in the Service Section are $10.00 per inch per insertion. One-inch minimum space accepted.

ROOFING, HEATING and VENTILATING CONTRACTORS

Climb with safety — use Johnson Ladder Shoes to prevent slipping. Made of high grade, long-lasting rubber. Get several sets for **complete** security.

Always flat — no matter what angle you place the ladder

JOHNSON LADDER SHOE COMPANY
EAU CLAIRE WISCONSIN

FOLDING BRAKES

Form angles, flanges and Pittsburgh locks. 26 gauge steel. Cam locking. Can be bolted to bench, or edge of truck. All steel, reinforced. Shipped Express Collect, 30" size, Wt. 54 lbs., $26.50. 36" Wt. 66 lbs., $31.00; 48", 100 lbs., $45.00. Floor mountings, 32" high, $7.00 extra. Order direct, cash, or C.O.D., or send for folder.

VYKE BRAKE CO.
Y-1116 S. 27th St., Omaha 5, Nebraska

WODACK "DO-ALL"
ELECTRIC HAMMER

Simply remove hammer member and it's a ¾" electric drill. The hammer drills concrete from ¼" to 1½" dia. — short holes for expansion anchors, long holes through walls. Also chips, raggles and does other cutting and surfacing jobs on concrete and masonry. Try it and you'll buy it. Send for Bulletin 500AA and trial offer.

Wodack Electric Tool Corp.
4627 W. Huron St. Chicago 44, Ill.

HANDY TOOLS AND EQUIPMENT

Available for Prompt Shipment

A NEW CLIP PUNCH

For fastening slips or seams on ducts. Will push a "half moon" through 3 thicknesses of 18-ga. steel. No hammering or flattening out to fasten slip to the duct.

A DRIVE CLEAT NOTCHER

For notching drive cleats up to 3 in. in width, 22-ga. or lighter. Can be operated by hand or foot or can be easily mounted on the bench or on the job with clamps or bolts and screws.

Distributed exclusively by
REINER & CAMPBELL CO., Inc.
19 Euclid Ave., Newark 5, N. J.

IMMEDIATE DELIVERY

NEW & USED CHICAGO STEEL BRAKES

NEW 10' 18 GA. CAP., HAND
NEW 10' 16 GA. CAP., HAND
NEW 10' 14 GA. CAP., HAND
NEW 8' 18 GA. CAP., HAND
NEW 6' 18 GA. CAP., HAND
NEW NOS. 420 & 520, HAND
NEW W32, 5' 14 GA. BOX & PAN
NEW W36, 6' 14 GA. BOX & PAN
6' 10 GA. CAP. BOX & PAN

BAR FOLDERS

NO. 4 NIAGARA, 60" BENCH TYPE
NEW NO. 63F PEXTO, 30" 22 GA.
30" NIAGARA, BENCH TYPE
21" NIA. 22 GA. (9)
NEW NO. 055D PEXTO, 36", 20 GA.

PRESS BRAKES

NEW NO. 335: 6' 14 GA. CAP., 72" Bed
NEW 10' ¼" UNIV. HYD., 156 Ton
10' 10 GA. OHL. B. G.
NO. 128 CHICAGO STEEL: 32" Length of Bed & Ram. 18 Ga. Cap., 28" Bet.
NEW NO. 131 D & K, 6' 18 Ga.

FOLDERS & BRAKES COMB.

NEW NO. 25 CHGO. STEEL, 36", 20 Ga.
42" NIA. UNIV., 20 Ga.

SHEARS, POWER

12 GA. QUICKWORK STAMPING TRIMMER
NO. 46 NIAGARA: NEW 1944 6' 12 Ga.
5' 14 GA. KUTSCHEID: B.G., 18" Gap
72" x 14 GA. WYSONG & MILES, V.B.M.D.
NEWBOLD CIRCLE 3/8" CAP., 24" Thr
16A NIAGARA ROTARY & CIRCLE SHEAR
NO. 245 BUFFALO ALL STEEL, SPLITTING
32" PEXTO, FOOT (5)
31" NIAGARA, FOOT

ROLLS, POWER

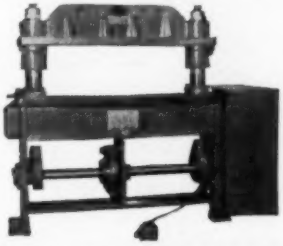
6' 14 GA. LOWN, DROP END, PYRAMID TYPE
60" BUFFALO INITIAL TYPE THREE ROLL: ¼" Cap., 7" Dia. Rolls
42" LOWN INITIAL TYPE SLIP ROLL: Drop end, 5" dia. rolls.
5' 14 GA. NIA. INITIAL TYPE SLIP ROLL FORMER, NEW 1945
36"x10 GA. PEXTO SLIP ROLL FORMER

WELDERS, SPOT
NEW REX WELDERS
IMMEDIATE DELIVERY
ALL TYPES — ALL SIZES

250 KVA SCIAKY, SPOT, AIR PRESS: 20" throat, 220 volt.
175 KVA THOMSON: 25¼" thr., 440 volts.
100 KVA THOMSON ELECTRIC: M. D. Press Type, 12" thr., 440 volt

OBI PRESSES
NEW JOHNSONS
ALL TYPES — ALL SIZES

NO. 5 CONS., 45 TON, 4¼" str., 8¾" shut ht. 18"x30" bed
NO. 3L2 D&K, 40 TON, 3½" str., 11" shut ht., 19"x36" bed
NO. 4 CONS., 40 TON, 2½" str. 7" shut ht. 14"x24" bed
NO. 21 BLISS 31½ TON, 2¾" str., 7-11/16" shut ht., 18¾"x27¾" bed
NO. 3-C BLISS: 30 Ton Cap.; 3" str.; 6" shut height; 17" x 25" bed; B. D.
NO. C-13 FERRACUTE, 2-½" shaft; 3" str.; 9" shut ht.; 11"x24" bed.
NO. 3036 PARKER MULTI-MAX DOUBLE CRANK PRESSES: LATE TYPE, 30 Ton, 2" Stroke, 10" shut height, 12"x37" bed.



Our "BLUE BOOK" Lists and Illustrates all Types of Metal Working Machinery. SEND FOR YOUR FREE COPY TODAY.

Write—Wire—or phone YArds 7-5800.

Eastern Office—2829 N. Broad St., Philadelphia, Penna. Phone BAldwin 9-5932

INTERSTATE *Machinery Co., Inc.*

1433 W. PERSHING RD., CHICAGO 9, ILL.

INDEX TO ADVERTISERS

A & A Register Co., The ..... *
A-J Mfg. Co. 153
A-P Controls Corp. 42
Adams Co., The 169
Adelta Mfg. Co., Inc. 59
Aerofin Corp. 155
Ahlberg Bearing Co. 165
Air Conditioning Products Co. 158
Air Controls, Inc. ..... *
Air Control Prod., Inc. .. Inside Front Cover
Air Filter Corp. ..... *
Airtemp Div. of Chrysler Corp. 100
Ajax Furnace Fitting Co. 165
Alfol Div., Reflectal Corp. 147
Allen Co., Inc., L. B. 168
Allmetal Screw Products Co. 164
Alton Mfg. Co. ..... *
Aluminum Co. of America 143
American Air Filter Co., The 13
American Brass Co. 53
American Gas Machine Co. 159
American Machine Products 163
American Radiator & Standard Sanitary Corp. 51
Anchor Div., Stratton & Terstegge Co. .. 155
Anemostat Corp. of America 49
Armco Steel Corp. ..... *
Armstrong Co., The ..... *
Armstrong Furnace Co. 37
Atlas Mfg. Co. 136
Auer Register Co. 38
Auto-Flo Corp., The 60
Automatic Burner Corp. ..... *
Automatic Humidifier Co. 21

Bacharach Industrial Instrument Co. .... *
Barber Colman Co. ..... *
Barber Gas Burner Co., The 154
Bayley Blower Co. 158
Berger Bros. Co. 166
Berger Mfg. Co., Div. of Republic Steel Corp. ..... *
Bethlehem Steel Co. ..... *
Beverly Shear Co. 154
Bishop & Babcock Mfg. Co., Inc. 155
Boston Machine Works Co. 163
Brauer Supply Co., A. G. 169
Bremil Mfg. Co. ..... *
Brundage Co. ..... *
Burke Engineering Co. ..... *

Central-West Machinery Co., Inc. 170
Century Electric Co. 58
Century Engineering Corp. 16
Certified Furnace Co. ..... Inside Back Cover
Char-Gale Mfg. Co. 1
Chase Brass & Copper Co. 17
Chevrolet Motor Div., General Motors Corp. ..... *
Cincinnati Elbow Co., The 157
Circulators & Devices Mfg. Corp. 165
Claraire Fan Co. 44
Cleveland Humidifier Co. 156
Climatemaker Slide Rule Service 169
Combustioneer Div., The Steel Products Engrg. Co. 141
Condensation Engineering Corp. 6
Corlett-Turner Co. 162
Crescent Tool Co. 48
Criae Controls Div., Acro Mfg. Co. 123
Cummins Portable Tools Div., Chicago Corp. ..... *

Dahlstrom Machine Works 160
Delco Appliance Div., General Motors Corp. 56
Delco Products Div., General Motors Corp. *
Delta Heating Corp. 133
Des Moines Furnace & Stove Repair Co. 160
Detroit Lubricator Co. ..... *
Diamond Mfg. Co. 169
Dieckman Co., Ferdinand ..... *
Doyle Vacuum Cleaner Co. ..... 157 & 170
Dravo Corp. 61
Dreis & Krump Mfg. Co. 166
Dualtron Co., The ..... *

Elgo Shutter & Mfg. Co. 168
Emerson Elec. Mfg. Co. 52

Fabricated Products Company ..... *
Fallsington Mfg. Co. 146
Federated Metals Division 14
Field Control Div., H. D. Conkey & Co. 139
Fireline Stove & Furnace Lining Co. 149
Follansbee Steel Corp. 147
Forest City Foundries Co., Inc. ..... *

Galvan Mfg. Co. 164
General Electric Co. ..... *
General Filters, Inc. 124
Gerett Corp., M. A. 156
Glasfloss Corp., The ..... *
Gray and Dudley Co. 122
Gray Metal Products, Inc. 153
Gustin Bacon Mfg. Co. ..... *

Hall-Neal Furnace Co. 119
Hammel Radiator Engrg. Co. 160
Harrington & King Perforating Co. ..... *
Hart & Cooley Mfg. Co. 137
Harvey, Inc., Sid ..... *
Heil Company ..... *
Henderson Furnace & Mfg. Co. 134
Henry Furnace Co., The 18
Hess Co., The ..... *
Hess-Snyder Co. ..... *
HomEase Products Company ..... *
Hussey & Co., C. G. ..... *

Illinois Testing Laboratories, Inc. ..... *
Independent Pneumatic Tool Co. ..... *
Independent Register Co. ..... *
Ingersoll Products Div., Borg-Warner Corp. ..... *
Inland Steel Co. 54
Inland Steel Products Co. 62
International Nickel Co., The ..... *
International Oil Burner Co. ..... *
Interstate Machinery Co., Inc. 171
Iron-Hide Refractories Inc. 169

Jackson & Church Co. ..... *
Johns-Manville Corp. ..... *
Johnson Co., S. T. ..... *
Johnson Gas Appliance Co. 167
Johnson Ladder Shoe Co. 171
Juniper Elbow Co., Inc. 170

Kalamazoo Stove & Furnace Co., The .. *
Kent Company, Inc., The ..... *
Kingston-Conley Div., Hoover Co., The . 50
Kirk & Blum Mfg. Co. 166
Ko-Z-Aire, Inc. 165
Kresno-Stamm Mfg. Co. (America) Inc. . 132
Krueger Sentry Gauge Co. 12

Lau Blower Co. ..... *
Libert Machine Co. 158
Lima Register Company ..... *
Little Giant Vaporizer Co. ..... *
Lockformer Co. 9

Made-Rite Co., Inc. 159
Maid-O'Mist, Inc. ..... *
Majestic Co. 164
Maplewood Machinery Co. 168
Marshalltown Mfg. Co. ..... *
May-Fiebeger Co. 157
Mayflower Air Conditioners, Inc. ..... *
Mercoid Corp., The 167
Meyer & Bro. Co., F. ..... *
Meyer Furnace Co. ..... *
Midco Register Corp. 157
Mid-Continent Metal Products Co. 126
Mid-States Welder Mfg. Co. ..... *
Miller & Doing 168
Miller Products ..... *
Milton Equipment Co. 168
Minneapolis-Honeywell Regulator Co. .. .. 120 & 121
Morey, Dan 166
Morrison Products, Inc. 46
Morrison Steel Products, Inc. 43
Mueller Furnace Co., L. J. 25
Mulkey Co., J. F. 23

National Lock Company 135
National Metal Fabricators 161
National Super Service Co. 159
Niagara Machine & Tool Works 35
Norman Products Co. 33
Nu-way Corp. 8

Ohio Valley Hardware & Roofing Co. .. *
Oilux Co. ..... *
Olsen Mfg. Co., C. A. 15
Owens-Corning Fiberglas Corp. 39

Packard Elec. Div. General Motors Corp. *
Palmer Mfg. Co. 151
Parker-Kalon Corp. 141
Patten Co., J. V. 10
Peck, Stow & Wilcox Co. 138
Peerless Electric Co. 149
Penn Electric Switch Co. 34
Penn Ventilating Co. ..... *
Perfex Corp. 31
Petersen Mfg. Co. ..... *
Pioneer Furnace Co. 129
Pioneer Tool Co. ..... *
Potts-Farrington Co. 170
Prat-Daniel Corp. 139

Queen Stove Works, Inc. 128
Quiet Automatic Burner Corp. ..... *

R C S Tool Sales Corp. ..... *
Randall Graphite Bearings, Inc. 143
Reiner & Campbell Co., Inc. 171
Reinhard Bros. Co. 163
Research Products Corp. ..... Outside Back Cover
Revere Copper & Brass, Inc. 113
Rheem Mfg. Co. 20
Richmond Radiator Co. 65
Rochester Mfg. Co., Inc. 145
Rock Inland Register Co. 167
Royal Heaters, Inc. 140
Ryerson & Son, Inc., Joseph T. 66

Sall Mountain Co. ..... *
San Angelo Fdry. & Machine Co. 155
Schaefer Brush Mfg. Co. 36
Scully Signal Co. ..... *
Security Mfg. Co. 27
Sequoia Mfg. Co. 28
Severson Mfg. & Supply Co. 161
Siemon & Co. 156
Skilsaw, Inc. 144
Skuttle Mfg. Co. ..... *
Smith, R. E. 152
Southwest Mfg. Co. 154
Standard Stamping & Perforating Co. .. 159
Stewart-Warner ..... *
Sundstrand Engrg. Co. ..... *
Sundstrand Hydraulic Div., Sundstrand Machine Tool Co. 35
Sun-Ray Burner Mfg. Co. 150
Surface Combustion Corp. 30
Swartwout Co. 168
Swirling Oil Burner Mfg. Co. 19
Syncromatic Corp. 5

Thatcher Furnace Co. 127
Thermac Company ..... *
Thor Metal Prod. Co. 169
Toridheet Div., Cleveland Steel Products Corp. 47
Trade-Wind Motor Fans, Inc. ..... *
Turner Brass Works, The 151
Tuttle & Bailey, Inc. 29

Union Mfg. Co. 167
U. S. Machine Corp. ..... *
United States Register Co. 22
United States Steel Co. 41
United States Steel Supply Co. ..... *
Utility Appliance Corp. 45

Van Dorn Electric Tool Co., The ..... *
Van Packer Corp. 11
Viking Air Conditioning Corp. 24
Vyke Brake Co. 171

Walker Mfg. & Sales Corp. ..... *
Wallace Co., William 26
Walsh Refractories Corp. 142
Ward Heater Co. 144
Ward Machinery Co. 169
Waterman-Waterbury Co. 80
Wayne Home Equipment Co., Inc. ..... *
Webster Elec. Co. ..... 130 & 131
Western Engrg. Co. 161
Wheeling Corrugating Co. 57
White-Rodgers Elec. Co. ..... *
Whitney Mfg. Co., W. A. 163
Whitney Metal Tool Co. 162
Williams Oil-O-Matic Division Eureka Williams Corp. 125
Williamson Heater Co. 40
Wilson, Inc., Grant 166
Wilson & Co., Inc. 148
Wiss & Sons ..... *
Wodack Electric Tool Co. 171
Wolff & Co., Benjamin 7
Wysong & Miles Co. 32

XXth Century Htg. & Vent. Co. 161

Youngstown Furnace Co. 162

Zeh Co., Inc. 169

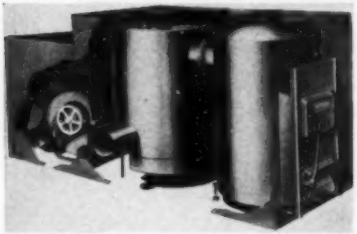
Firms represented in this issue are identified by the folio of the page on which their advertising appears. Advertising which appears in other issues is marked with an asterisk.

COUNTERFLOW HEATING UNITS

DELIVER UNIFORM, AIR-CONDITIONED WARMTH ECONOMICALLY WITH OIL-GAS-COAL

Certified

Cut-a-way photo showing Counterflow principles.



Certified MAMMOTH Heating Units for schools, churches, factories, auditoriums, commercial buildings. Six sizes ranging from 390,000 to over 1,750,000 B.T.U.'s.

Certified Furnaces are made of heavy boiler plate steel. (No heavier steel used in any furnace.) Every Certified furnace body is electrically welded at all seams to make it leakproof. Furnace front is permanently welded to main body to prevent gas leakage and cut installation costs. Easily changed filters remove dust, dirt and pollen from the air. Large capacity blower with self-aligning bronze bearings is driven by rubber-mounted motor. This provides efficient, trouble-free operation without noise or vibration. Attractive enameled cabinet takes up very little floor space.

Certified Counterflow Heating Units are engineered for high efficiency. Large fuel savings are effected by pre-heating the cold air in the heat saver before it is filtered and forced through the main heating chamber. Manufactured in a full line of sizes from 90,000 to 1,750,000 B.T.U.'s.

For more information about these high quality trouble-free units, just mail the coupon below.

CERTIFIED FURNACE CO.

DIVISION OF

STAINLESS & STEEL PRODUCTS CO.

1000 BERRY AVENUE • ST. PAUL 4, MINNESOTA

STAINLESS & STEEL PRODUCTS CO.
1000 Berry Avenue • St. Paul 4, Minn.
Send literature on the following Certified Counterflow Units:

- ☐ OIL FIRED HEATING UNITS
- ☐ COAL FIRED HEATING UNITS
- ☐ GAS FIRED HEATING UNITS
- ☐ MAMMOTH STEEL FURNACES
- ☐ CONVERSION OIL BURNERS
- ☐ CONVERSION GAS BURNERS

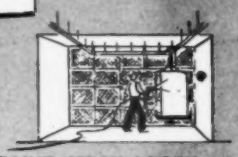
NAME_____
FIRM_____
ADDRESS_____
CITY_____ ZONE____ STATE_____

WE ARE JOBBERS ☐ DEALERS ☐

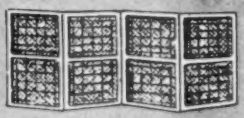
THERE'S AN RP *Air Filter for:*

FORCED WARM AIR FURNACES

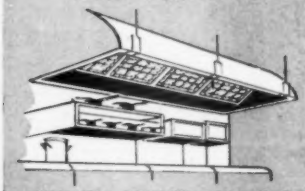
UNIT AIR CONDITIONERS



PAINT SPRAY BOOTH



CENTRAL SYSTEM FILTER BANKS



KITCHEN GREASE CANOPIES

ENGINE INTAKE

SPECIAL PURPOSE DESIGNS

ANOTHER RP FIRST!

ODOR REMOVAL

COMBINED WITH HIGH EFFICIENCY FILTRATION

R-P D-O* Air Filters (Replacement Type) and R-P D-O* Kote (Adhesive for R-P Washable Filters) will be available to you shortly.

These two new products of research by Research Products Corporation will give your customer-owners of forced warm air heating systems *clean, odor-free* air.

The principal involved is true odor absorption—masking agents or sensory perception deadening agents are not employed. Unpleasant odors are actually caught and held just as dirt and dust are caught in ordinary filters.

This new development is important to you for two reasons: (1) You can offer your present customers added living comfort; (2) A forced warm air heating plant is the only system that can take advantage of this development for home heating purposes.

Informative literature on D-O* Air Filters and D-O* Kote is now being prepared. We will be happy to supply you with this material as soon as it is available.

*Dust and Odor Removal

Write RESEARCH PRODUCTS CORP., Madison, Wis., U. S. A.

RP . . . PRODUCTS OF RESEARCH

WASHABLE AND REPLACEMENT AIR FILTERS • GREASE FILTERS
EVAPORATIVE COOLER MATERIALS